

LOREN HALL, CHICAGO

September • 1955

finish

THE MAGAZINE OF
Appliance AND
Metal Products MANUFACTURING

FROM RAW METAL TO FINISHED PRODUCT



according to a leading maker
of home laundry equipment...
we have produced for them

A SUPERIOR ALKALI RESISTANT GROUND COAT !

Again "KNOW-HOW"
proves its case !

You just can't beat the combination of scientific research and genuine practical experience . . . and that's exactly the combination which is producing superior Frits for Ing-Rich customers.

It should be of significant importance to you that our ceramic engineers have the rare advantage of daily contact with our large enameling plant where we both enamel our own products and do a very large job enameling business.

Ing-Rich ceramic engineers have the answer to *your* Frit problems because they have added practical "know how" to their scientific training.

INGRAM-RICHARDSON, INC.

OFFICES, LABORATORY AND PLANT
FRANKFORT, INDIANA

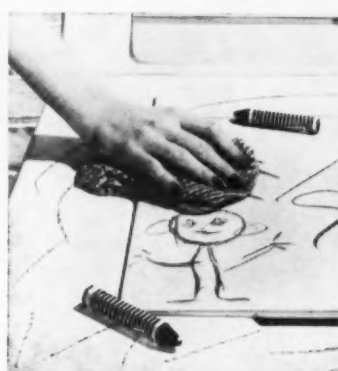
Only PORCELAIN ENAMEL gives your product all this...



TOUGH AND DURABLE. Even whirling roller skates fail to mar this counter top made of porcelain enamel on Armco Enameling Iron. Other surface finishes often scratch or peel.



RESISTS HEAT. Burning cigarettes or searing skillets don't damage the rock-like surface of porcelain enamel. It doesn't discolor when subjected to ordinary temperatures.



EASY TO CLEAN. Stains from crayons or lipstick wipe away easily with a damp cloth. The surface of porcelain enamel on Armco Enameling Iron is hard, smooth, non-porous.

and

COLOR

too

No other material can match the beauty and wear resistance of porcelain enamel and give you a full range of colors too. Can this unique combination of advantages add sales appeal to your product?

Write to us for the name of an experienced job enameiler near you. You'll find that he can help you work out problems of design and production. You'll find too, that most job enameilers specify Armco Enameling Iron as the base metal for their product. They know that Armco quality stays high from one shipment to the next. That's how it earned its reputation as the "World's Standard Enameling Iron."

ARMCO STEEL CORPORATION

1655 Curtis Street, Middletown, Ohio

Send me the names of job enameilers who can be of assistance.

We manufacture _____

Name _____

Company _____

Street _____

City _____ Zone _____ State _____



ARMCO STEEL CORPORATION

1655 CURTIS ST., MIDDLETOWN, OHIO

SPECIAL STEELS

SHEFFIELD STEEL DIVISION • ARMCO DRAINAGE & METAL PRODUCTS, INC. • THE ARMCO INTERNATIONAL CORPORATION

it's as easy as this...

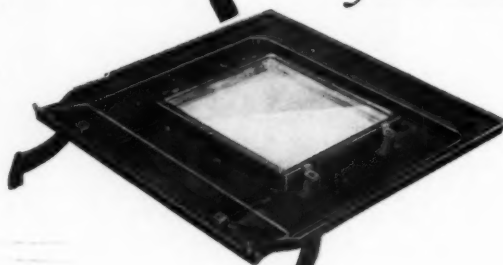
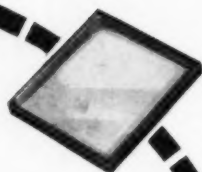
FOR
COLUMBUS STOVE

PERMA-VIEW

*the window
you can see through
always!*



*"out of our carton —
into your door"*



Yes sir, it's as easy as this. The PERMA-VIEW oven door window comes to you ready for immediate installation in your range — to add a sales feature second to none.

The strong steel encased, double pane PERMA-VIEW window incorporates the finest quality heat resisting glass. It is mechanically sealed to prevent infiltration of vapors and to eliminate "fogging." This "non-fog" window meets the constantly growing demand for "visible baking."

More and more range manufacturers are turning to PERMA-VIEW as a practical, economical and effective sales feature for their new models. We will gladly work with your engineering department in adapting its use to your range. Write or phone for complete information.

Phone MArket 4-2256

• The Columbus Stove Company's Model 80 KTBG Divided Top Range features the PERMA-VIEW window. Columbus Stove also uses the PERMA-VIEW window in its 36-inch cluster top model and in a 20-inch apartment size model in their 1955 line.

MILLS

PRODUCTS, INCORPORATED

1015 W. MAPLE ROAD • WALLED LAKE, MICHIGAN

September • 1955

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finish

MONTHLY TRADE PUBLICATION

Established January 1944

Published by

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Telephone • TErrace 4-5280

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A trade publication devoted to the interests of the metal products manufacturing industry with special editorial attention to home appliances. Includes technical and practical information on plant facilities and manufacturing problems from raw metal to safe delivery of the finished product, with special emphasis on fabrication, metal preparation, metal finishing, assembly, and packaging and shipping.

Free controlled circulation to management, purchasing, engineering and key plant personnel in metal product manufacturing plants. To others, subscription price is \$5.00 per year, domestic. To all other countries \$8.00 per year (U.S. funds).

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consultants

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RALPH F. BISBEE

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BPA

NBP

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METAL PRODUCTS MANUFACTURING
FROM RAW METAL TO FINISHED PRODUCT

THE NEW LINE OF METAL FASTENERS

PHILLIPS and SLOTTED • ALL STANDARD SIZES and FINISHES



TAPPING SCREWS • MACHINE SCREWS • STOVE BOLTS
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ALSO ROLL THREAD CARRIAGE BOLTS

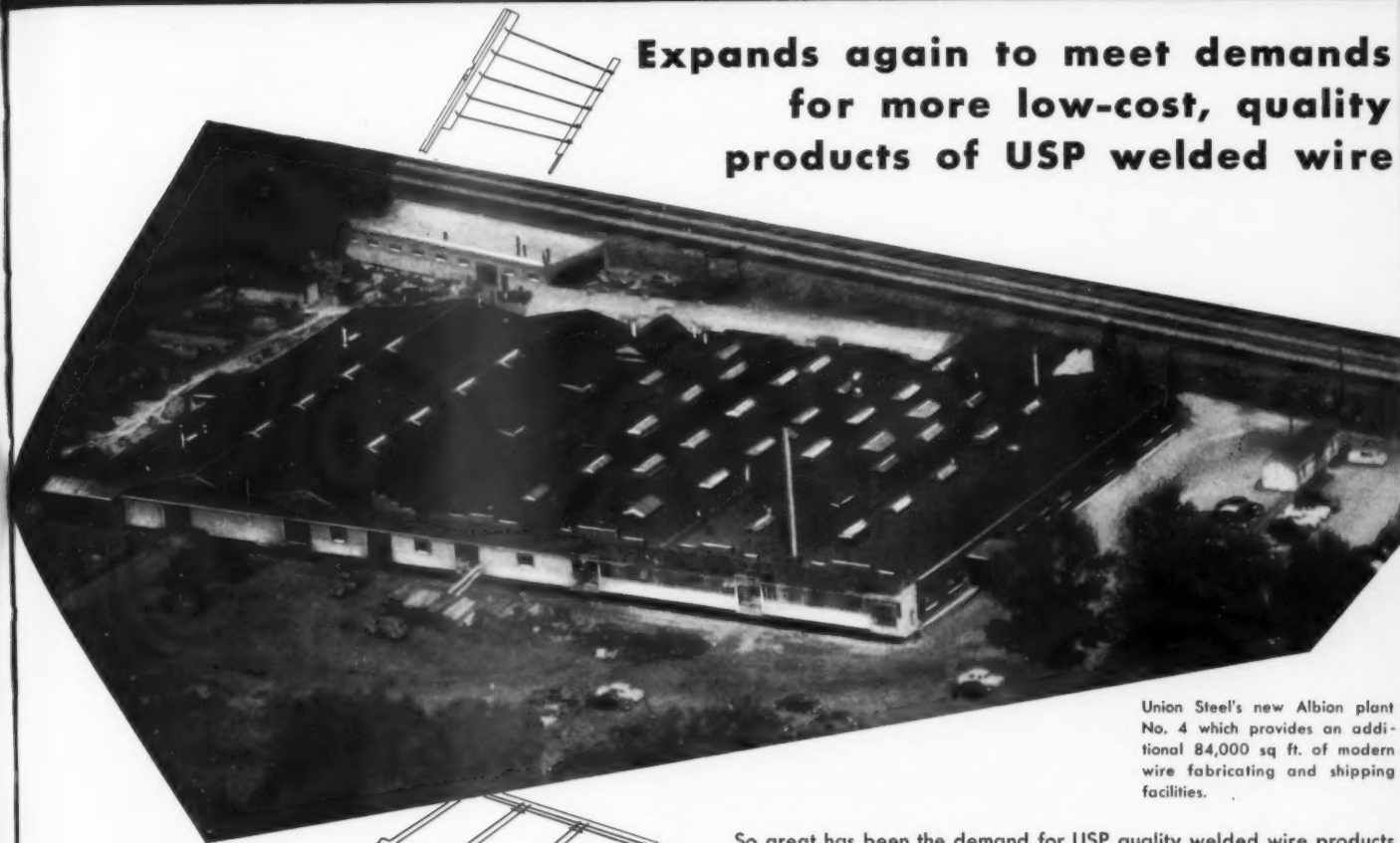
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For information and samples write Box 1360-F2, Statesville, N. C.

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UNION STEEL PRODUCTS CO.

**Expands again to meet demands
for more low-cost, quality
products of USP welded wire**



Union Steel's new Albion plant No. 4 which provides an additional 84,000 sq. ft. of modern wire fabricating and shipping facilities.

So great has been the demand for USP quality welded wire products that Union Steel has again expanded its production, engineering, sales and service facilities through the recent purchase of another modern plant containing over 84,000 square feet of wire fabricating area.

The newly acquired plant will enable an increased production of refrigerator shelving, oven racks, grilles, guards, baskets . . . and all of the broad variety of welded wire products manufactured and in-plant finished by Union Steel Products Company of Albion, Michigan. Another good reason for selecting USP as your one dependable source for quality welded wire products.

Union Steel's main plant contains 385,000 sq. ft. of the most modern, up-to-date wire forming and finishing facilities to help you make your product more efficient.

UNION STEEL PRODUCTS CO.

First Name in Wire Products

ALBION, MICHIGAN



X Check list for LITHIUM Researchers—No. 1

Lithium has enabled industry after industry to achieve over-all savings through shortcuts, reduction of waste, improvement of end-product, and simplification of operating procedures. Check your field of interest in Lithium below. If you are interested in a spe-

cific application relative to Lithium not indicated in the checklist, note the fact in the form furnished, attach it to your letterhead and send it to us. Our research laboratory will look into the matter for you.

LITHIUM COMPOUNDS

LITHIUM CARBONATE

Uses:

- ☐ Porcelain enamels
- ☐ Pottery glazes
- ☐ Special glasses
- ☐ Pharmaceutical chemicals
- ☐ Lithium salts
- ☐ Heat treating salts

LITHIUM HYDROXIDE

Uses:

- ☐ Storage batteries
- ☐ Gas absorption
- ☐ Pharmaceutical chemicals
- ☐ Multi-purpose greases
- ☐ Lubricating oils
- ☐ Lithium salts

LITHIUM CHLORIDE

Uses:

- ☐ Gas absorption
- ☐ Air conditioning
- ☐ Welding rods
- ☐ Brazing fluxes
- ☐ Lithium metal
- ☐ Heat treating salts
- ☐ Deicer fluid

LITHIUM COBALTITE

Uses:

- ☐ Porcelain enamels (ground coats and colored cover coats)

LITHIUM BROMIDE

Uses:

- ☐ Air Conditioning
- ☐ Pharmaceuticals
- ☐ Gas absorption

LITHIUM NITRATE

Uses:

- ☐ Refrigeration
- ☐ Heat treating salts

LITHIUM MANGANITE

Uses:

- ☐ Porcelain enamels (ground coats for kitchenware, refrigerators, stoves, etc., cover coats for colored ware)
- ☐ Semi-conductors

LITHIUM SILICATE

Uses:

- ☐ Titanium porcelain enamels
- ☐ Glazes for sanitary ware
- ☐ Pottery glazes

LITHIUM TITANATE

Uses:

- ☐ Titanium porcelain enamels
- ☐ Ceramic glazes
- ☐ Electric porcelain

LITHIUM ZIRCONATE

Uses:

- ☐ Porcelain enamel ground coats
- ☐ Titanium porcelain enamel cover coats
- ☐ Ceramic glazes
- ☐ Electric porcelain

LITHIUM ZIRCONIUM SILICATE

Uses:

- ☐ Ceramic glazes
- ☐ Electric porcelain

LITHIUM ALUMINATE

Uses:

- ☐ Flux in highly refractory enamels

LITHIUM (META)BORATE

Uses:

- ☐ As a flux in enamel cover coats

LITHIUM MOLYBDATE

Uses:

- ☐ As smelter or mill addition in white enamel cover

I am interested in Lithium _____ for
(Compound, Metal or Derivative)

the following application: _____

Technical Data Sheets are available for every compound in the checklist. They will be sent as checked above.

... trends ahead in industrial applications for Lithium



**LITHIUM CORPORATION
OF AMERICA, INC.**

2635 RAND TOWER
MINNEAPOLIS 2, MINN.

MINES: Keystone, Custer, Hill City, South Dakota • Bessemer City, North Carolina • Cat Lake, Manitoba • Amos Area, Quebec • BRANCH OFFICES: New York • Chicago
CHEMICAL PLANTS: St. Louis Park, Minnesota • Bessemer City, North Carolina • RESEARCH LABORATORY: St. Louis Park, Minnesota

How can you use Monarch's new
vitreous enameled aluminum castings
 to improve your products?



Here is a revolutionary new finish—pioneered by Monarch—for users of aluminum castings. Could this be your solution to problems involving colorful sales appeal and surface protection? Certainly such an outstanding new development is worth your investigation.

From housewares to hardware—industrial equipment to home appliances, vitreous enameled aluminum castings offer many new advantages—new uses. For specific information write for Monarch's new brochure—"Vitreous Enameled Aluminum Castings".

MONARCH
 ALUMINUM

radiant color...
 surface protection...

MONARCH ALUMINUM MFG. COMPANY—9205 DETROIT AVENUE—CLEVELAND 2, OHIO
 MANUFACTURERS OF Aluminum Permanent Mold Castings • Zinc Die Castings • Aluminum Die Castings
 Exclusive Velvaglaze Finishing • Vitreous Enamel Finishing—MEMBERS: CERTIFIED ZINC PLAN • AMERICAN DIE CASTING INSTITUTE

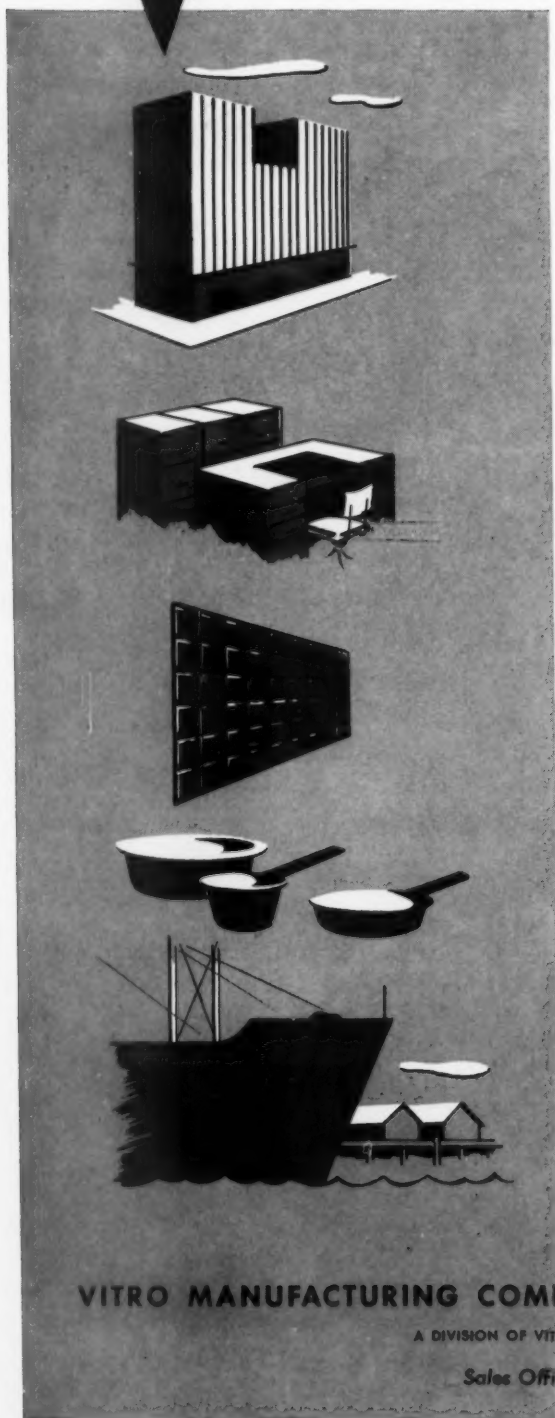
finish SEPTEMBER • 1955

7

LORD HALL LIBRARY

Vitreous Enamels for Aluminum

by VITRO



To give your products an extra sales punch *plus* many other important advantages, it will pay you to combine the color appeal of Vitro vitreous enamels with the many desirable qualities of aluminum.

These superior Vitro finishes can be easily and economically applied to aluminum alloys, at temperatures from 800° to 1000° F., to give a wide choice of surface textures and beautiful colors. They are lightfast and extremely durable . . . offer utmost resistance to thermal shock, all kinds of weather, corrosive atmospheres, impact, flexing, sulfides, acids and alkalis . . . and provide very high opacity. And of special note: the majority of these vitreous enamels are either low in lead content or entirely lead-free.

If you would like to have the full story on Vitro vitreous enamels for aluminum, write for your copy of Bulletin No. 101.



VITRO MANUFACTURING COMPANY • 60 GREENWAY DRIVE, PITTSBURGH 4, PA.

A DIVISION OF VITRO CORPORATION OF AMERICA

Sales Offices In Principal Cities



flyng presses and induction motors

Gentlemen:

Your feature article in the June issue on the new Wean "Flying Press" causes us to ask for additional information. Please let us have available particulars about presses rated 60 tons and down.

The New Supplies & Equipment section, in the same issue, gives information about a new induction-type motor. . . . We have particular interest in a dual-speed type suitable for operating business machines. Would you kindly furnish literature available for this motor type in order to precede a direct contact with the manufacturer.

N. Soderberg
Aktiebolaget Ecliptic
Stockholm, Sweden

finishing aluminum castings

Gentlemen:

The article, "Surface Finishing Aluminum Castings", in July 1955 *finish*, certainly looked better in print than I had imagined it would.

You will be interested to know that an engineer in New York state, one in Detroit, and several in Chicago, contacted me saying they had read and enjoyed my article in your magazine.

John H. Keating
Vice President — Mfg.
Monarch Aluminum Mfg. Co.
Cleveland, Ohio

insulated ironing board covers

Gentlemen:

We are taking the liberty in writing to you, as we read each month your magazine *finish*, which we enjoy very much.

Now, as we are manufacturers of ironing tables . . . we should be most obliged if you could supply us with the address of the "Miliun" firm which makes insulated fabric covers for ironing boards.

Ron Frost
Export Manager
Van Elderen's Metaalwarenfabriek
Aalst, The Netherlands

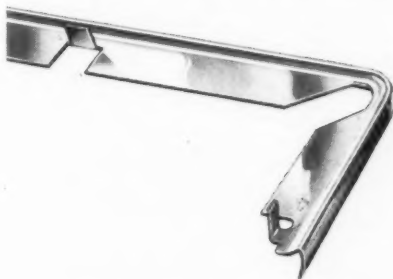
The firm's name and address is Miliun Division, Deering, Milliken & Co., Inc., 1407 Broadway, New York 18, N. Y.

finish SEPTEMBER • 1955

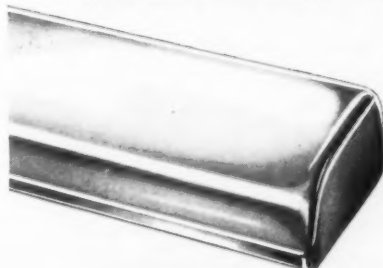
PYRAMID

Mouldings shaped to **SELL**

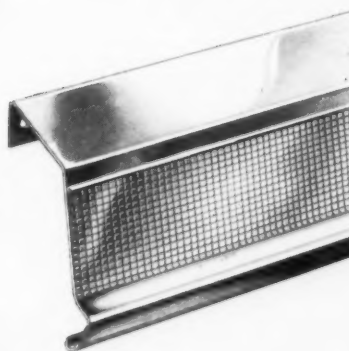
Attractively formed and highly finished additions of bright trim are often final sales makers. PYRAMID specializes in producing roll formed mouldings, in all metals, with "SELL" appeal at a modest cost.



The sparkling waffle pattern in this bold lamp shade was economically applied in the initial roll operation.



Divider mouldings and other sections can be bent to sharp radii without distortion or crimping of external contours.



Deep drawn end closures, as shown at left, eliminate costly supplementary end pieces.

See Pyramid, whether your moulding needs are for simple or complex sales making shapes. Write for your free catalog, today.

Pyramid Mouldings Inc.

5365 WEST ARMSTRONG AVE., CHICAGO 30, ILL.
NEW YORK... CALIFORNIA

SEND FOR YOUR FREE COPY OF "PLAN BOOK OF METAL MOULDINGS"

No one connected with the design or manufacture of any appliance should be without a copy of this book containing hundreds of standard and special mouldings. Send for your free copy today.

Without obligation, please send copy of
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Name _____ Title _____

Firm _____

Address _____

THERE'S HEAT THERE'S

FAHRALLOY

WHERE

WHERE THERE'S HEAT THERE'S FAHRALLOY

FAHRALLOY...

WHERE THERE'S HEAT THERE'S FAHRALLOY WHERE THERE'S HEAT THERE'S

**engineering experience
is yours for the asking**

For over 20 years Fahrалloy engineering experience has helped solve many stubborn problems involving burning tools for the porcelain enamel industry. These range all the way from "S" hooks to complete fixtures for firing washing machine tubs.

The point is that no matter what your burning tool problem may be . . . no matter how tough you may think it is you can have complete confidence that you'll get the right answer at Fahrалloy. Remember, too, that Fahrалloy engineering experience is something that can't be bought — but it's yours for the asking.



**FAHRALLOY BURNING TOOLS
are the No. 1 choice of the
Porcelain Enamel Industry**



THE FAHRALLOY CO.

150th & Lexington Ave. — Harvey, Illinois

In Canada — Fahrалloy Canada, Ltd., Orillia, Ontario



put up a good front with the help of Titanox®

Colorful porcelain-enamel exterior panels are real "comers" in building construction. And TITANOX-TG titanium dioxide in the frit is the key to high acid-resistance and lifetime weather-resistance. In titania enamels, TITANOX-TG and TITANOX-TG-400, although notable for whites, are the basis for modern architectural pastels.

TITANOX-TG and TITANOX-TG-400 are made especially for porcelain enamels. Their free flow, easy handling, efficient melting and uniformity result

in lower costs for the frit maker. TITANOX-TG-400 is specifically designed for blue-white enamels.

Our Technical Service Department will be glad to assist you with your frit formulation problems. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; Atlanta 5; Boston 6; Chicago 3; Cleveland 15; Houston 2; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 14, Ore.; San Francisco 7. In Canada: Canadian Titanium Pigments Limited, Montreal 2; Toronto 1.

TITANOX®

brightest name in the finish



TITANIUM PIGMENT CORPORATION

Subsidiary of NATIONAL LEAD COMPANY

3450

PHILCO'S ROASTMETER...

Another

KS

Customer Cooperative

ACHIEVEMENT



Philco's new Roastmeter electric range, an outstanding advance in automatic cooking, is another achievement of K-S Research in cooperation with the engineering staff of its customer.

Philco had been working on the device which would keep the cook continuously informed of the progress of the roasting process without having to open the oven door or stoop down to peer into a hot oven.

The problem involved the design of a suitable sensing element or probe for the meat and the electrical transmission of actual inside meat temperature to an indicator on the range control panel.

It was in resolving this problem that K-S helped Philco in the final design of the Roastmeter.

The materials selected for the probe assembly provide for a maximum operating temperature of 500° F.

The transmission and indicating elements compensate automatically for fluctuations in input line voltage and for ambient temperature variations up to 200° F.

When you standardize on K-S indicating and control equipment, you increase the sales appeal of your product and you build customer good will. K-S engineers are always available for information and suggestions.

KING-SEELEY CORPORATION

ANN ARBOR, MICHIGAN

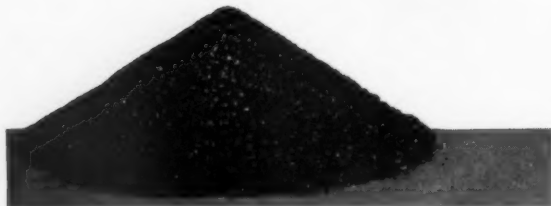
THE finish spotlight



Designed for quick and easy cleaning, Chambers new electric "liftopt" range features a hinged cooking surface that swings up for ready access to burners. The unit fits on a 24-inch-wide standard base cabinet, has a back splash of stainless steel and a cooking deck finished in satin chromium plate. Front and side panels are available in either stainless steel or "copperlux" finish to match the antique copper of the "In-a-Wall" oven.

Try Century Vit

GROUND COAT



"Start right from the Steel out" is more than a slogan — it represents a policy and belief at Century that without an easy-working, trouble-free ground coat with good adherence or "Grip" no finish can give trouble-free service for the life of the product.

The millions of pounds of Century ground coat frit that are used every year by our customers give extra assurance of trouble-free finishes, both in the shop and on the finished product.

Century time-proved frits "put dollars in your pockets" too. They are priced right to start and there are "in plant" savings that count up fast.

If you haven't tried this economical, trouble-free enamel, contact us and we'll see that you have the opportunity.

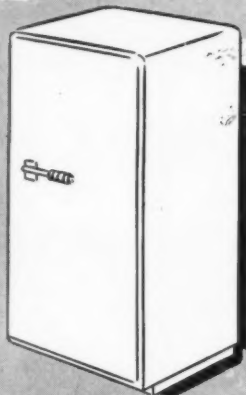
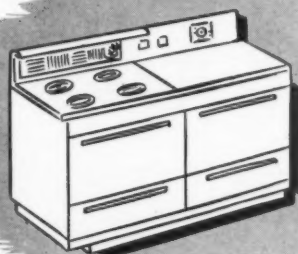
An experienced field staff serves the plants of all Century customers. Phone PORTsmouth 7-7260.



CENTURY VITREOUS ENAMEL COMPANY

6641-61 S. Narragansett Ave., Chicago 38, Ill.

Your Best Start



for a Better Finish...

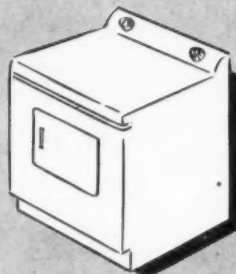
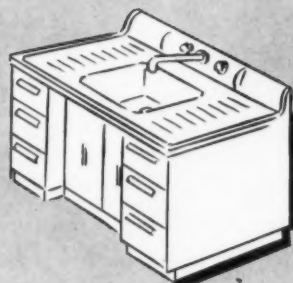
Porcelain Enamel Containing

FOOTE LITHIUM

- "Softer" composition for faster firing schedules
- Ideal workability for smooth, abrasion resistant finish
- Lower firing temperatures
- Low bubble structure

... these are a few of the advantages you will profit by when you use a porcelain enamel frit containing Foote lithium.

It will pay you to get the facts about the ingredient that makes the difference—Foote lithium.



LITHIUM CHEMICALS
FOR INDUSTRY

*Kings Mountain,
N.C. ... where
Foote is mining
large deposits
of spodumene.*



*Sunbright, Va.
... the world's
largest lithium
chemical plant.*



FOOTE MINERAL COMPANY

412 Eighteen West Cheltenham Building, Philadelphia 44, Pa.

RESEARCH LABORATORIES: Berwyn, Pa. • PLANTS: Exton, Pa.; Kings Mountain, N.C.; Sunbright, Va.

INTERNATIONAL HARVESTER

Heavy Equipment Completely Baked in 20 Minutes

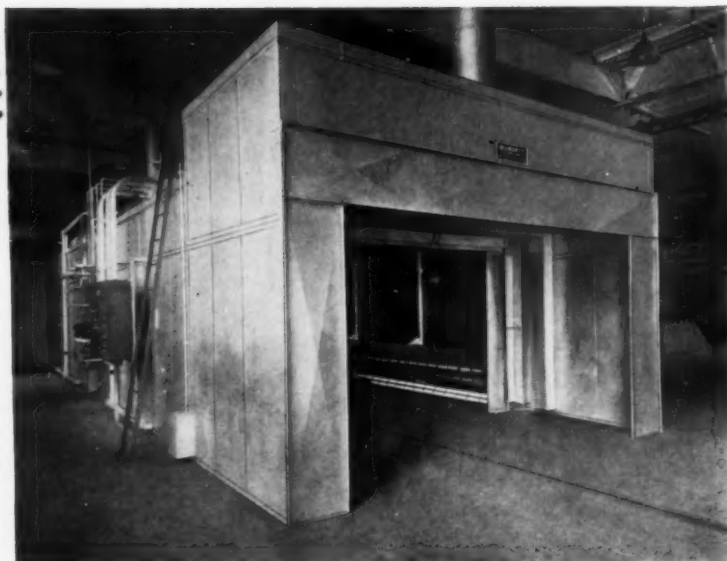
These are the results which have made Burdett "Radiant-Heat" Systems the preferred paint drying method for all types of products from toys to heavy duty equipment like the crawler tractor equipment shown here.

Burdett "Radiant-Heat" Ovens equipped with Model 10L Radi-Heat Line Burners are particularly suited for handling the tougher assignments, such as; tractors, bulldozers, earth movers, trucks, heavy welded fabricated parts, etc. with a remarkable saving in time and fuel, plus the assurance of a better finished product.

Here's why such speed is possible only because the radiant heat which is generated by the Burdett System reaches the metal work with virtually no loss. Baking of the enamel finish is accomplished by the combination of Radiant-Heat and controlled air recirculation. Control equipment for this oven has been specifically designed to meet International Harvester Company and JIC specifications.

Burdett No. 10L "Radi-Heat" Line Burners, as used here, satisfy unlimited applications with a new efficiency and lower cost. They have been known to cut fuel costs as much as 70%, as compared with conventional methods.

Let us send you detailed information on Burdett "Radiant-Heat" Ovens for your finishing department —to convert your existing oven — or for a complete new system.



* This Burdett System is installed in the International Harvester Company Tractor Works. Enamel finishes are baked on the husky International equipment in 20 minutes time.



BURDETT
MANUFACTURING COMPANY

3401 West Madison Street, Chicago 24, Illinois

Detroit Philadelphia New York Cleveland Dallas

Manufacturers of
COMPLETE FINISHING SYSTEMS — "RADIANT-HEAT SYSTEMS" OVENS, HEATERS,
AIR MAKE-UP UNITS, SPRAY BOOTHS AND WASHERS

New Flexibility...
New Versatility...
in light metal
tangent bending



Adjustable

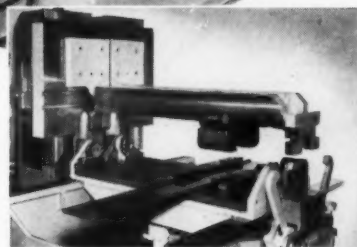
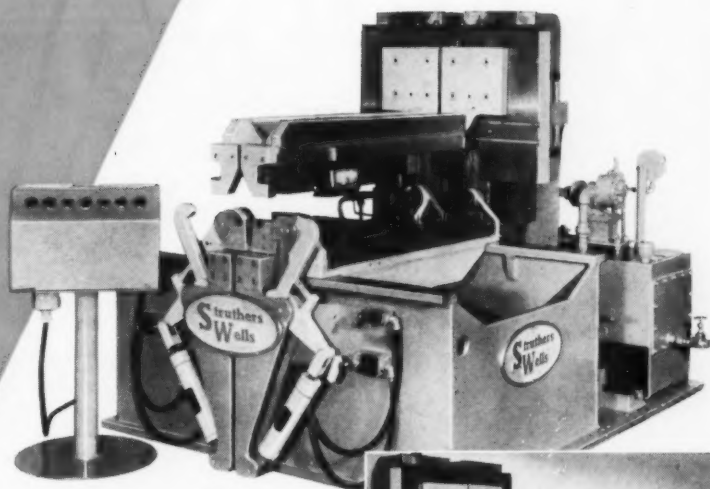
BENDING MACHINE

Designed for use on the lighter tangent bending assignments where our well-known Heavy Series machines are not required, this new Struthers Wells Adjustable Bending Machine is finding wide application in the appliance and other industrial metal working fields.

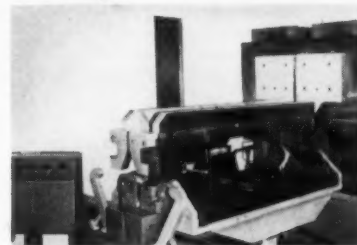
Fully adjustable to handle dies for a variety of products with ease and speed of changeover, the machine radially edge-bends preformed flanged sheets into complete wraparound units for window air-conditioners, TV cabinets and many other items—rapidly, smoothly and at low cost.

Shown at right is a typical Bending Machine operating sequence.

• Write for a quotation on your particular bending requirements.



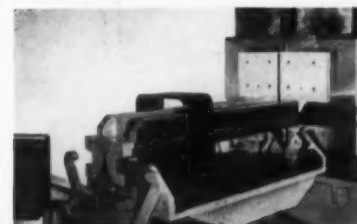
● Flanged and punched sheet positioned for bending



● Two bends made in first operation



● Material positioned for second operation



● Second operation completes bending of parts

MACHINERY DIVISION

Struthers Wells Corporation

TITUSVILLE, PA.

Offices in Principal Cities

MCDANEL

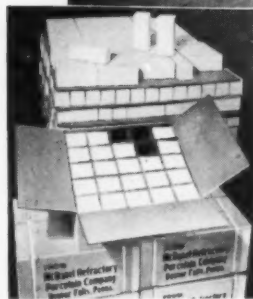
The Nation's Leading Manufacturer of
LONG-LASTING HIGH DENSITY BRICK



Look at this close-up of McDanel Super High Density Mill Lining Bricks. Note the smoothness . . . the uniformity . . . and the taper for exact fit. Available in 1½", 2" and 2½" thicknesses.



Years ago we began research and tests on Super High Density Mill Lining Brick. We installed them in our own ball mills . . . ran them for years under heavy production schedules. We can prove that McDanel Super High Density Brick lasts at least 2½ times longer than porcelain brick. Savings of 40% or more are possible during the life of the lining. McDanel was FIRST to market high density mill lining. Continuing research and manufacturing control assures you of the finest product at all times.



McDanel Super High Density Bricks are packed in easy to handle, dust-tight cartons. Each brick nests in its own compartment. Cartons are clearly labeled and instructions furnished.

A mill lining job done with McDanel Super High Density Brick in an 8-foot mill. Note the excellent fit . . . the smooth surface. McDanel Super High Density Bricks are the easiest and quickest to install. Write today for your copy of "Facts About McDanel Super High Density Mill Linings."

If you plan mill relining during vacation shutdowns—Rush your order NOW!!



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REFRACTORY PORCELAIN COMPANY
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MEETINGS

TRIPLE PRODUCTION SHOW

Metalworking Machinery and Equipment Exposition, The Coliseum, Chicago, September 6-16.

Production Engineering Show, Navy Pier, Chicago, September 6-16.

Machine Tool Show, International Amphitheatre, Chicago, September 6-16.

ENAMELERS SHOP FORUM

Porcelain Enamel Institute, annual shop practice forum, Ohio State University, September 14-16.

PACKAGING-HANDLING SHOW

Society of Industrial Packaging and Materials Handling Engineers, annual packaging and materials handling show, Kingsbridge Armory, New York City, September 20-22.

PAINT FEDERATION MEETING

Federation of Paint and Varnish Production Clubs, annual meeting and show, Hotel Statler, New York City, October 3-5.

WORLD PLASTICS FAIR

World Plastics Fair and Trade Exposition, National Guard Armory, Exposition Park, Los Angeles, October 5-9.

STAMPERS ANNUAL MEETING

Pressed Metal Institute, annual meeting, Grove Park Inn, Asheville, North Carolina, October 9-12.

LUBRICATION CONFERENCE

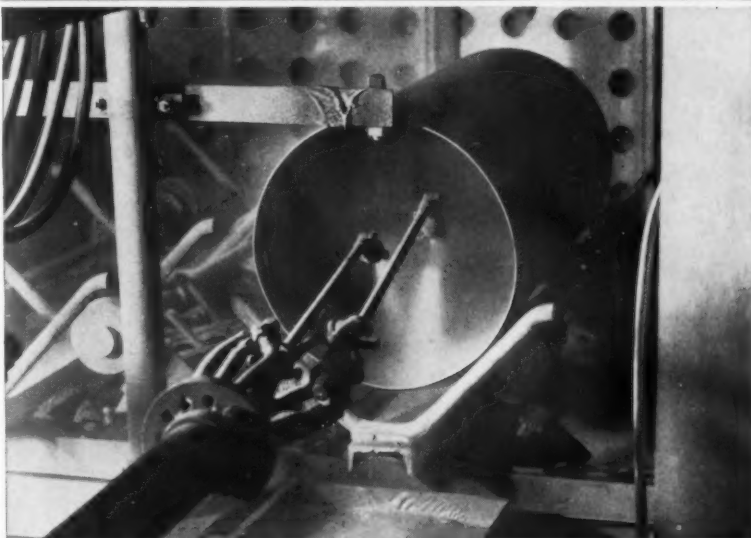
Joint Lubrication Conference of American Society of Lubrication Engineers and the American Society of Mechanical Engineers, Antlers Hotel, Indianapolis, October 10-12.

GAS APPLIANCE MFRS. MEETING

Gas Appliance Manufacturers Association, annual meeting El Mirador Hotel, Palm Springs, California, October 12-14.

finish SEPTEMBER • 1955

WHAT'S NEW in automatic finishing



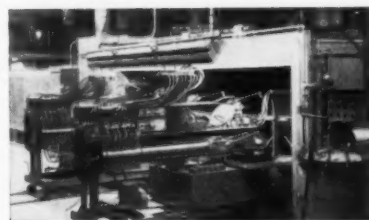
These Binks Model 21V automatic spray guns reach deep into the steel tanks on muscles of steel...apply smooth uniform coating of "glass."

Binks guns automatically spray glass linings in Rheem tanks

Rust and corrosion have long plagued the owners of water heaters. To lick this problem, the Rheem Manufacturing Company, world's largest maker of automatic storage water heaters, developed Rheemglas. Rheem literally lines these new tanks with glass. It is sprayed on in the form of a slip, made from a special frit and is later fused with the metal walls of the tank at 1600° F.

To produce these superior tanks in quantity and at reasonable manufacturing costs, Rheem engineers rely heavily on the latest techniques of mass production. Equipment was developed, with the help of Binks engineers, to apply the glass linings automatically.

A long reciprocating arm pushes Binks Model 21V automatic spray guns deep into the tank. The guns turn on and off automatically and



Over-all view of automatic machines.

coat the inside of the tank quickly and uniformly. Flues are coated separately on Binks vertical reciprocating machines.

Installations of this kind show what can be accomplished when plant engineers utilize the knowledge and experience of specialists. Binks engineers have worked closely with leading manufacturers for over 50 years. The knowledge they have gained is yours for the asking.



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COMPRESSORS



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WITHOUT
71-D
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a phosphate cleaner and rust inhibitor
GIVES BETTER PAINT

A D H E S I O N

**71-D prevents rust spread
and rust blisters**

A MACCO CASE HISTORY*

As in all fields today, purchasers of metal products are constantly demanding more and more in the quality of their paint finishes.

By far the most efficient and economical method of preparing metals for the finest and most enduring paint job is by use of Macco M.C. No. 71-D. Laboratory and shop tests prove that, on steel, cast iron, aluminum or die cast, Macco M.C. No. 71-D provides a corrosion-resistant phosphate coating comparable in quality to that formerly available only through expensive and elaborate methods of preparation.

TESTED ADVANTAGES OF MACCO M.C. No. 71-D CLEANER

1. Cleans soil from metals and etches in one operation.
2. More economical because of longer life of solution.
3. Gives microscopic phosphate coating, greatly aiding in paint adhesion and corrosion resistance.
4. No special equipment required.
5. Never hardens in the drum.
6. Gives excellent protection against rust prior to painting.
7. Simple to control solution.
8. Can be run in conventional one, two, or three stage washers, as well as in other types.

Use Macco M.C. No. 71-D Cleaner and Phosphate Coating and add immeasurable quality to the finish of your product.

*Actual case history, names, etc. can be had by writing today to

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STEEL STAMPING DOES IT BETTER... ACKERMANN-WHEELING DOES IT BEST!



There's an idea here for YOU!

This complex stamping is a side of the new "Band Box*," Ackermann-Wheeling's nestable all-steel shipping container.

In addition to being unusually difficult, this stamping represents how one job was carried from conception to completion: solved, tooled, mass produced, assembled... all accomplished efficiently, economically.

This will give you some idea of the versatility, ingenuity and completeness of Ackermann-Wheeling's services. It is this resourcefulness that may explain why *Ackermann-Wheeling has never failed to complete a job due to inability to solve it or inability to produce it!*

Put this team of production experts to work for *you*. For complete details on Ackermann-Wheeling services write, wire or call.

Engineered Stampings

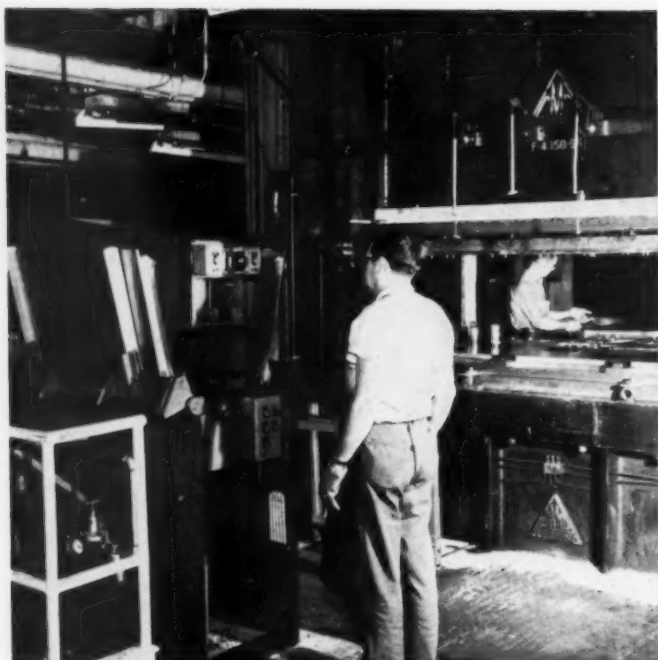


"THE BAND BOX" is Ackermann-Wheeling's new fully nestable, self-palletized steel shipping container. Engineered to specific requirements. Send for full details.

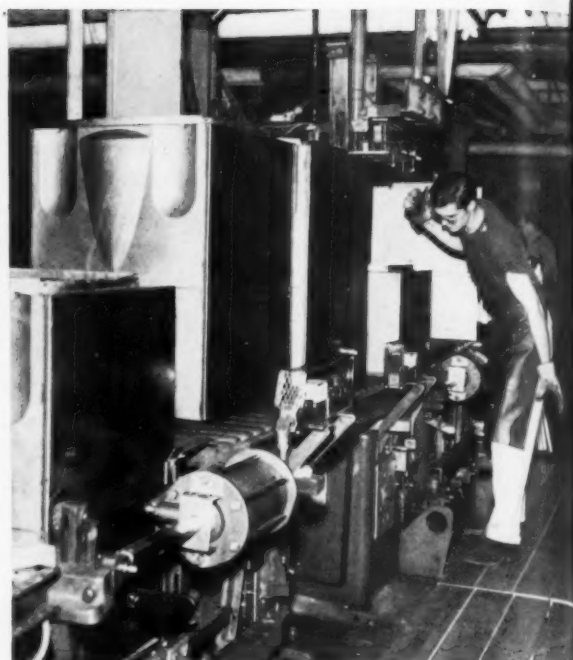
* Pat. applied for



ACKERMANN MANUFACTURING COMPANY
WHEELING • WEST VIRGINIA



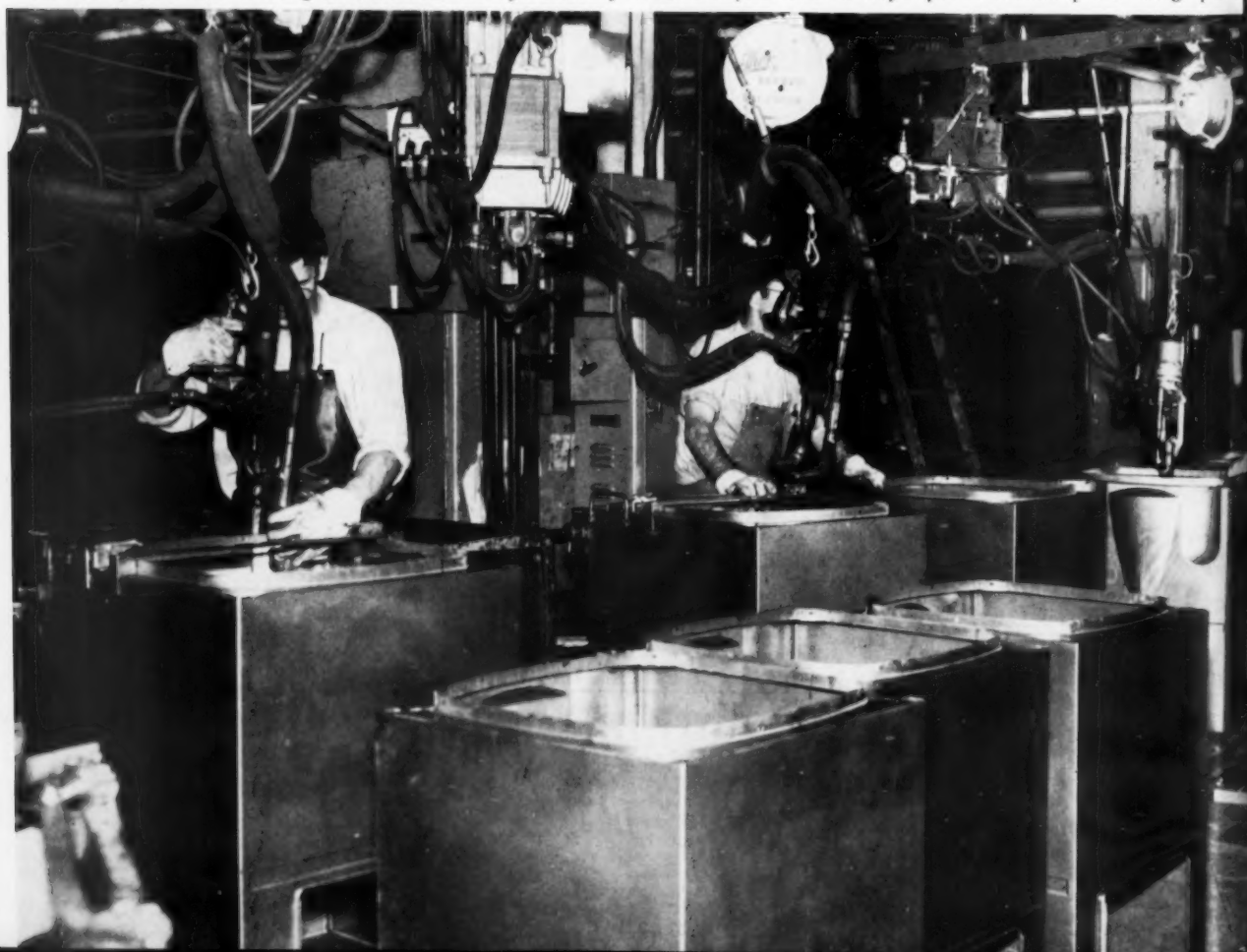
After sheet for wrap-around washer cabinet is blanked in a 250-ton press, it is flanged in a 400-ton press, at right, followed by a folding operation, at left, to form the two sides and front. From here the cabinet moves up a short ramp conveyor to automatic seam and spot welding line.



View down welding line where back panel and bottom bulkhead are added. Operator at far right is operating seam welder which welds back to cabinet. Next operator controls spot welding operations performed at breaks in conveyor where cabinets are hydraulically lowered into welding position.

finishfotos

At end of automatic welding line, cabinets are hydraulically lowered to floor-level conveyor for additional spot welding operations.



Fabricating home laundry equipment at Hotpoint

modernization of plant facilities more than doubles previous production capacity

Part I of a series

finish

Hotpoint recently completed a comprehensive modernization of its home laundry manufacturing facilities which will permit the company to more than double its former capacity for the production of automatic clothes washers and dryers.

Included in the plant expansion was the addition of much new equip-

ment in the fabrication department, including heavier presses, dry lubricating systems, roller levelers, mechanical hands for unloading presses, and seam and spot welders.

Rollercoater for drawing compound

All steel stock is trucked into the plant in bundle-form and is stored in an area adjacent to a straight-through machine for the automatic application of drawing compound. Continuous cable conveyors carry the steel sheets through the following cycles in the totally enclosed machine: (1) cleaning in hot water with mild alkali cleaner, (2) drying with steam jets, (3) application of drawing compound by roller coating, and (4) drying the coated steel with hot air.

At the exit end of the machine the sheets are stacked on portable hydraulic steel storage platforms and are towed by power truck to four principal press lines and to other fabrication areas. These hydraulic platforms deliver the steel at die level so that the press operator can easily transfer the sheets to the press.

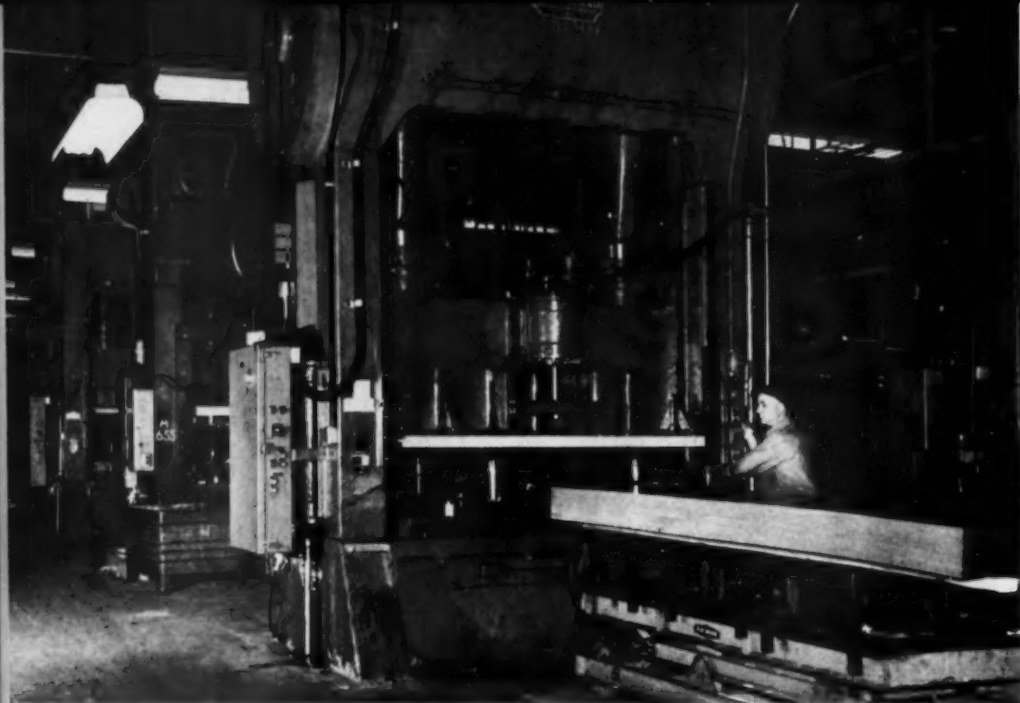
The fabrication department has presses ranging in size from 400 to 120 ton capacity. Here the washer tops, dryer bulkheads, dryer tops, etc., are fabricated. These press lines are set up to run from a week to 10 days at one time.

Forming dryer bulkheads and drum cover

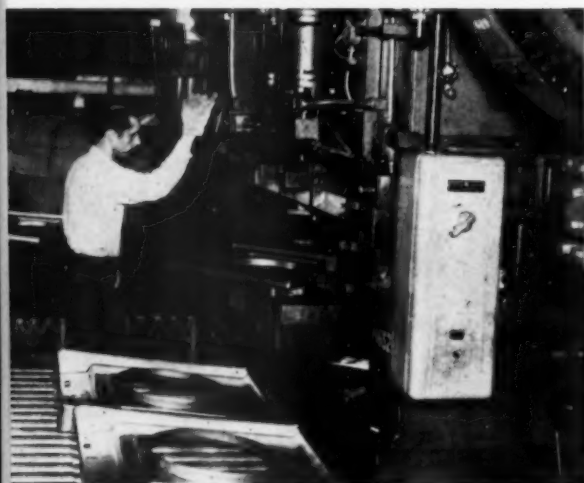
As an example of how fabrication

Prior to fabrication, all steel sheets are cleaned and roller-coated with drawing compound in this giant-size straight-through machine equipped with continuous cable conveyors. At exit end of machine, the sheets are stacked on portable storage platforms and towed to the principal press lines.



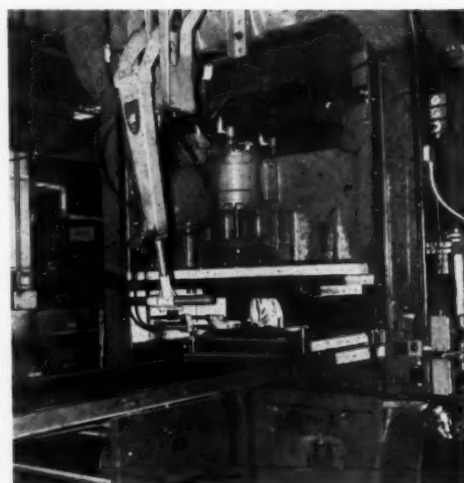


One of four rows of presses in the large press department at Hotpoint. Note the hydraulic steel sheet platform in foreground which keeps the sheets at die level for easy insertion into die. This line of presses is equipped with mechanical hands for unloading the presses and roller conveyors for handling parts between operations.



finishfotos

Right: Close-up view of mechanical hand unloading 250-ton press. The part is dropped onto moving belt conveyor which passes it onto gravity roller conveyor to next press station.



Left: Shown here is a corner forming operation on a washer top.

operations are performed in a straight-line operation, let's consider the line for the dryer front bulkhead and the inner door. This press line consists of five presses and a press brake. Between operations, the sheet is handled by roller conveyors, with mechanical hands used to unload the presses.

Blanking, forming and perforating operations are performed in the first three presses of 250-ton capacity each. In the following 180-ton press the cover for the dryer drum is blanked from the sheet (from here the cover is conveyed to a press in adjacent press line for final trim and sizing). The front bulkhead, formed from the same sheet, passes on to a

press brake where the ventilating holes are punched, then on to a 120-ton press where openings are slit in two opposite corners to allow for expansion without warping when the bulkhead is seam-welded to the dryer drum.

Forming the dryer-drum assembly

Following trimming to size in the shearing department, the sheets for the dryer drum are trucked to the welding-assembly area where the following operations are performed in making the dryer-drum assembly:

1. All holes required in the blank are pierced at one time in a hydraulic machine.

2. Clips are added to the blank in a single-point spot welder.
3. The sheet is rolled into a round shape with the operation carefully controlled to protect the clips.
4. The round form is then sized and welded in a seam welder to form the drum.
5. An automatic rolling machine flanges both sides of the drum at the same time.
6. Final sizing of the drum is performed in a special fixture.
7. Angle channel clip is welded to the drum.
8. Front bulkhead is welded to drum flange in large seam welder.

9. Rear bulkhead is welded to drum flange in second seam welder.
10. The assembly now goes by gravity conveyor to a squaring machine where channel braces are welded in position, with a hydraulic device elevating the drum to a convenient working height.
11. Assembly moves by another gravity conveyor to a turn-table device where the lint trap is welded in place.
12. The complete dryer-drum assembly is then hung on a conveyor feeding the porcelain enameling department.

Forming the washer cabinet shell

Adjacent to the welding-assembly area for the dryer drum is the weld-

ing-assembly area for the automatic washer cabinet shell.

After the steel sheets for the washer wrap-around shells are blanked in a 250-ton press in the fabrication department, they are transported to the head of the welding line where they are first flanged on a 400-ton press, followed by folding the three sides in a special jig.

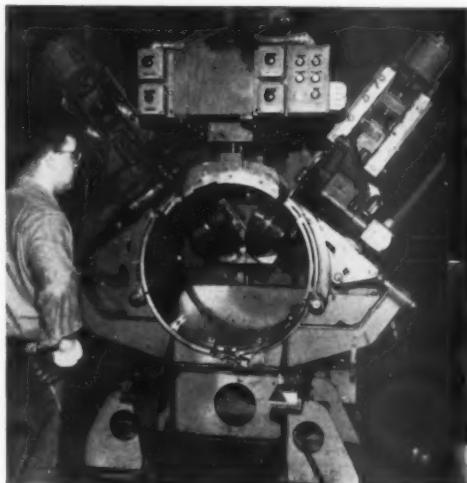
Next the shell moves up a short incline conveyor to the welding line where the back is seam-welded to the unit. It moves on the knee-high roller-conveyor to another welder where the bottom bulkhead is welded to the shell — with 24 spots on opposite sides. The cabinet moves down the conveyor to another welder where it is turned at right angles, and the

bulkhead gets 20 spots on front and back.

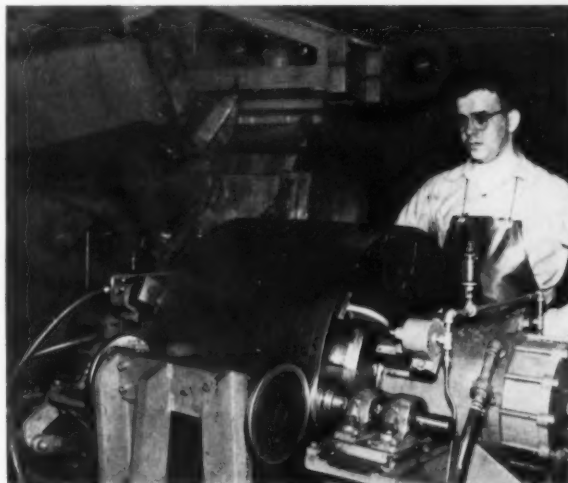
An automatic elevator lowers the cabinet to a floor-level conveyor for additional operations by four hand-operated welders, with two welders performing their work on the conveyor and two more on turntables on opposite sides of the conveyor. Following metal finishing, the cabinet shell is hung on a conveyor leading to the enameling department.

These are only a few examples of modern fabrication techniques employed at Hotpoint in the production of their washers and dryers.

Subsequent issues of *finish* will carry articles on finishing, assembly and packaging of Hotpoint laundry appliances.



Left: After sheet is rolled into round shape, it is sized and welded in this seam welder to form the dryer drum.



Right: Dryer drum is then placed in this automatic rolling machine which flanges both sides of the drum at the same time.

finishfotos

Front bulkhead is welded to drum flange in large seam welder at right. Drum is then turned over and inserted in seam welder at left where the rear bulkhead is welded.



a salute to Hotpoint

The completion of Hotpoint's new home laundry plant is the latest step in their expansion and modernization program.

While production facilities have been increased and improved, engineers have also been continuing to improve upon the quality and design of Hotpoint appliances. Each year L. R. Kerns Company has kept pace with these changes by developing quality products to meet the needs of this leading appliance firm.

We are proud to have served Hotpoint for over 15 years.

We look forward to serving Hotpoint for many years to come. As manufacturing chemists and producers of specialized compounds, we offer our technical services to the expanding appliance and fabricated metal products field.

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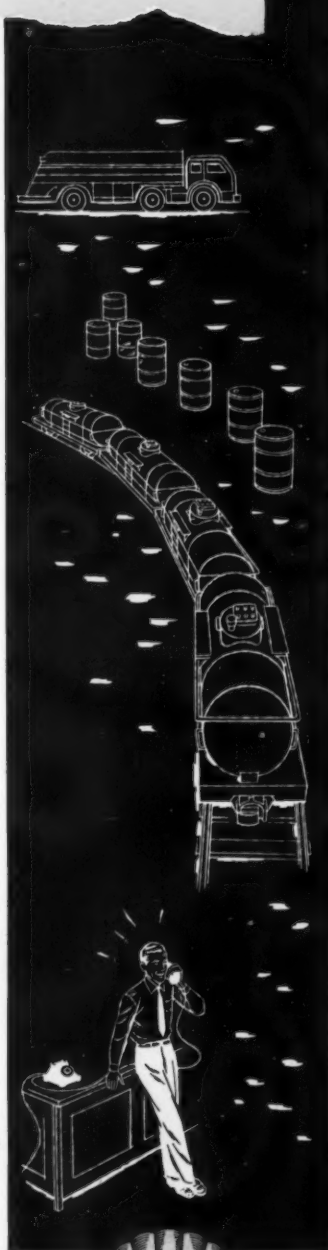
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TYPE: Alkyd-Amino Resin

GLOSS: Good

COLOR: White and tints

HIDING: Solid in one coat on steel

APPLICATION: Spray (reduce 5 parts enamel with 1 part SC #2 or Exlol)

HARDNESS: HB to H pencil depending on formula

BAKE: 10 to 30 min. at 300° or
5 to 15 min. at 325°
(varies with formula)

ADHESION: Good

COLOR RETENTION: Good

USES: Cabinets, water heater jackets, metal furniture and table. Also ideal for stools, containers, and other metal specialties wherever you require a high quality competitive finish.



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That's because Wheeling SOFTITE has the tightest zinc coating yet produced...so tight, in fact, that you can use it to make anything you can make of steel sheets.

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In water for 12,000 hours!

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AIR CONDITIONERS



Attractive appearance of Yorkaire Conditioners, such as this Model 552B, is improved with Pittsburgh's Tan Wrinkle Finish. Interiors are finished with Tan Baking Enamel. Both finishes are sprayed on and baked for 30 minutes at 325° F.



The exceptional performance of Pittsburgh's special finishes for residential and commercial cooling equipment is the result of long and close cooperation with such leaders in this industry as the York Corporation, makers of Yorkaire Conditioners.

Unusual resistance to moisture and humidity is the chief requirement of these coatings. To assure their ability to withstand rust and corrosion, these finishes are subjected to severe immersion and humidity tests. Finishes used on framework, pan sections and operating parts are tested for as long as 12,000 hours. Decorative enamels for exteriors are tested similarly for 6,000 hours,

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By working with designers, engineers and production executives in the air conditioning field, Pittsburgh has developed finishing materials which contribute to attractive appearance and give added years of satisfactory service.

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Finishing outdoor lawn furniture

electrostatic spraying helps boost production at Atlanta Stove Works

BEFORE the turn of the century, the word "Atlanta" was a by-word in many "modern" kitchens. At that time Atlanta Stove Works, Inc., of Atlanta, Georgia, was a leading producer of wood and coal burning stoves.

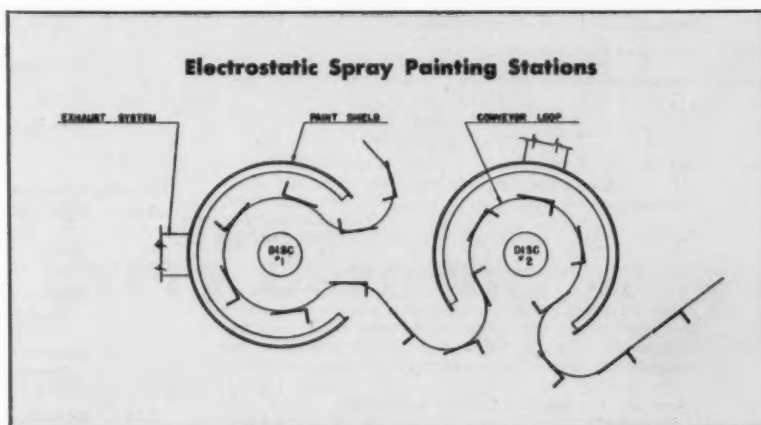
Today the company still produces these stoves along with modern ranges, gas space heaters, cast iron utensils and other cast iron products — but an important new line is the "Atlanta Leisure Line" of outdoor lawn furniture.

The steel furniture is produced in a variety of colors, including white, green, yellow and red. Gliders are made in two sizes, two and three-seaters, and the chairs feature tubular frames and perforated seats and backs.

Following fabrication, glider and chair parts are hung on the paint finishing department's 1000-foot conveyor which operates at 7½ feet per minute. One chair seat and chair back are hung on a workholder on a 3-foot center. Glider seats, backs and arm rests are hung alternately on the line.

The painting department utilizes a new electrostatic spray set-up for applying the first color on glider and chair panels, hand spray for recessed areas and for the second color, and flow coating for tubular parts.

Following a 5-stage bath, including phosphatizing, parts with recessed areas receive a hand spray before entering the first of two electrostatic spray areas where one side of the parts is painted. At each station the paint is applied with a reciprocating-type disc atomizer, 25 inches in diameter, which is mounted overhead in the center of a loop made by the conveyor. Because overspray is prac-



tically nil, no booth is required; however, there is a shield enclosure around each of the electrostatic spray areas. Parts painted on one side move into the second area where the other side is coated.

Following a dry-off, seats and backs of gliders and chairs go to a masking station where a second color is applied by hand spray. Parts then move into a gas-fired convection oven

to Page 110 →

Shown in the sample room at Atlanta Stove Works are, left to right: J. Fred King, research and development engineer; Saunders Jones, factory manager and son of Bolling Jones, Jr., company president; and M. J. Miller, manager.

ILLUSTRATIONS COURTESY RANSBURG ELECTRO-COATING CORP.



Program for PEI forum for plant men

annual shop practice forum to be held at the Ohio State University

THE 17th annual Shop Practice Forum of the Porcelain Enamel Institute will be held September 14, 15, and 16 at Ohio State University, Columbus, Ohio.

ADVANCE PROGRAM

Wednesday Morning, September 14

10:00 Registration — Archaeological Museum

10:30 Meeting of PEI Committees

Wednesday Afternoon, September 14

Presiding
R. M. King
Ohio State University

1:30 Address of Welcome.....Dean G. B. Carson,
College of Engineering, Ohio State University
Response.....Glenn A. Hutt,
Ferro Corporation,
President of Porcelain Enamel Institute

2:00 BRIEFS FOR INDUSTRY — Five Minute Reports
This entire session is devoted to concise prepared-in-advance reports on latest industry developments. These presentations are limited to five minutes each, with five minutes discussion to follow, and aim to summarize the progress and present status of topics of current interest to the industry.

Where Are We Going in Ceramic Engineering Education?.....Dr. A. I. Andrews,
University of Illinois

Coating Thickness Gage for Non-Magnetic and Magnetic Metals.....Fred H. Sawada,
Hotpoint Company

Ultrasonic Evaluation of Porcelain Enamel Bond Quality.....Gordon B. Baumeister,
Magnaflux Corporation

Fundamentals of Cathodic Protection...Forrest W. Nelson,
A. O. Smith Corporation

Solution Ceramics for Enameling.....S. W. Bradstreet,
Armour Research Foundation

Porcelain Enamels Firing Below 1300° F. (to be announced)
High Temperature Coatings.....D. G. Bennett,
University of Illinois

Progress Report on ASTM Committee C-22...L. S. O'Bannon,
Battelle Memorial Institute

Control of Sub-Sieve Fine Grinding.....Harry Afflerbach,
Ingram-Richardson, Inc.

Experiences with Dry Drawing Compounds...Richard F. Roy,
Dixon Chemical Company

4:00 PORCELAIN ENAMELING ON ALUMINUM

Presiding
R. F. Hafer
Reynolds Metals Company

Plant Experience with Porcelain Enamel on Aluminum.....Donald S. Pratt,
Ingram-Richardson Mfg. Co.

Mill Additions for Porcelain Enamel on Aluminum.....Grant E. Miller,
Ferro Corporation

Conditioning Treatment of Aluminum Prior to Enameling.....A. L. Sopp, Jr., W. R. Kappes, R. W. Ricker,
Aluminum Company of America

Thursday Morning, September 15

9:30 GENERAL INTEREST FORUM

Presiding
Clark Hutchison
Ingram-Richardson, Inc.

A Look Ahead for Porcelain Enamel.....A. S. Ault,
Chicago Vitreous Corporation

Overcoming Health Hazards in the Enameling Plant.....H. S. Kline,
Frigidaire Division, General Motors Corp.

Highlights from the Year's Literature.....W. W. Coffeen,
Metal & Thermit Corp.

Designing for Porcelain Enameling.....E. H. Shands,
The O. Hommel Company

Presiding
H. S. Saunders
The O. Hommel Company

Defining the Problem of One-Coat Processing.....Dr. G. H. Spencer-Strong,
Pemco Corporation

Relation of Stress and Strain to Processing of Porcelain Enamel.....J. H. Lauchner,
University of Illinois

The Pre-Name! 410 One-Coat Processing System.....Dr. Robert C. Gibson,
Parker Rust Proof Company

Shop Experience with the Pre-Name! 410 System.....W. H. Pfeiffer,
Frigidaire Division, G.M.C.

Thursday Afternoon, September 15

1:30 PROCESSING TECHNIQUES AND TEST METHODS

Presiding
R. S. Sheldon
Whirlpool Corporation

Progress in Processing by Committee Action.....John L. McLaughlin,
Allied Porcelain, Inc.

Practical Test Methods for the Enameling Industry.....J. H. Giles, Jr.,
PEI Research Associate, National Bureau of Standards

2:10 ENAMEL APPLICATION
Automatic Dipping.....Ralph Hanna,
Ferro Corporation

Flow Coating of Porcelain Ground Coat.....K. C. Reifsteck,
General Electric Co.

Electrostatic Applications of Cover Coat Enamel.....T. J. Snodgrass,
General Electric Co.

The Number 2 Electrostatic Spray Process.....W. L. Smart,
Ransburg Electro-Coating Corp.

3:30 METAL CLEANING

Presiding
John C. Swartz
Westinghouse Electric Corp.

Mechanical Cleaning.....George F. Jones,
American Wheelabrator & Equipment Corp.

Metal Preparation.....E. E. Bryant,
Ferro Corporation

3:50 ENAMEL STORAGE AND SCREENING

Continuous Screening of Dip Enamel with an Enclosed Filter Unit.....LeRoy Williams,
Seeger Refrigerator Co.

Friday Morning, September 16

9:30 ARCHITECTURAL PORCELAIN ENAMEL

Presiding
J. W. Vicary
Ervite Corporation

Weathering of Porcelain Enamel.....D. G. Moore,
National Bureau of Standards

An Expanded Weathering Test Program...Dr. J. J. Canfield,
Armco Steel Corporation

10:15 COLOR IN PORCELAIN ENAMEL

Presiding
E. Reigh Bullard
B. F. Drakenfeld & Co., Inc.

A Psychological Approach to Color...Dr. Samuel Renshaw,
The Ohio State University

A System of Color Control for Appliance Production.....Frank L. Michael,
General Electric Co.

Color Measurements and Their Use.....Gordon H. Johnson,
Ferro Corporation

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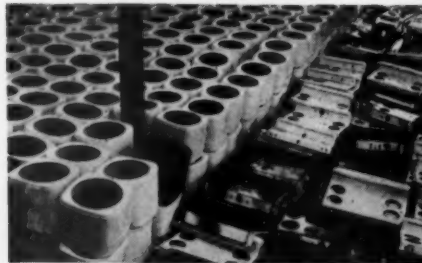
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22 gauge steel sheets as large as 48" x 120" are successfully coated without warpage through the use of . . .

Low temperature ceramic coatings for light gauge metal



During recent months a great deal of work has been done in the plant of Benjamin Electric Manufacturing Company, Des Plaines, Illinois, with low temperature ceramic coatings. Production work has included the coating of thousands of square feet of corrugated steel which has been installed on the buildings of the Youngstown Sheet & Tube Company, Youngstown, Ohio. The company is currently in production on chalk boards for schools which are produced in a soft matte green finish. Experimental work includes everything from lighting fixture components and washing machine components to door liners for refrigerators.

Benjamin Electric is an old established producer of commercial and industrial lighting equipment. The company has complete facilities for fabrication, organic finishing, porcelain enameling, assembly and testing of all types of commercial and industrial lighting fixtures for both fluorescent and Mazda light sources.

A high light in the company's successful history was the establishment of a complete lighting laboratory for the highly specialized technical testing of lighting equipment (see "We Built a Laboratory to Meet Our Future Needs", August, 1946, issue of *finish*).

The company operates a Crysteel Division for serving appliance and other product manufacturers with specialized components and with fabricating and finishing services. It

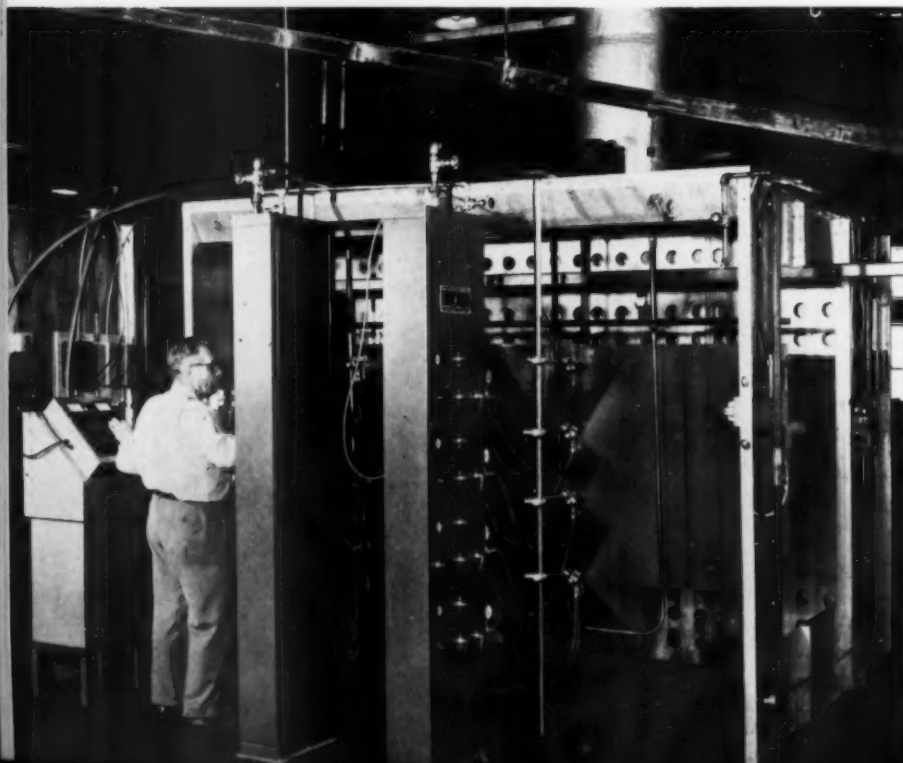
is this division that has done a great deal of pioneering work during recent months in the practical application of low temperature ceramic coatings.

The advent of lower firing porcelain enamels has been envisioned for a great number of years by both frit suppliers and porcelain enamel ware manufacturers. The advantages are many. When one goal is accomplished, it makes attainment of many other objectives possible. As an example, when a mechanism for developing bond (outside the cobalt, manganese and nickel sphere) has been developed, not only can maturing temperatures be reduced, but a wide range of colors in ground coat also become possible. Likewise, when maturing temperatures drop below the alpha critical point, for steels, the hot strength increases, and at the same time the quality of the steel including carbonic impurities become less of a problem, principally because the temperature at which they degenerate is not reached.

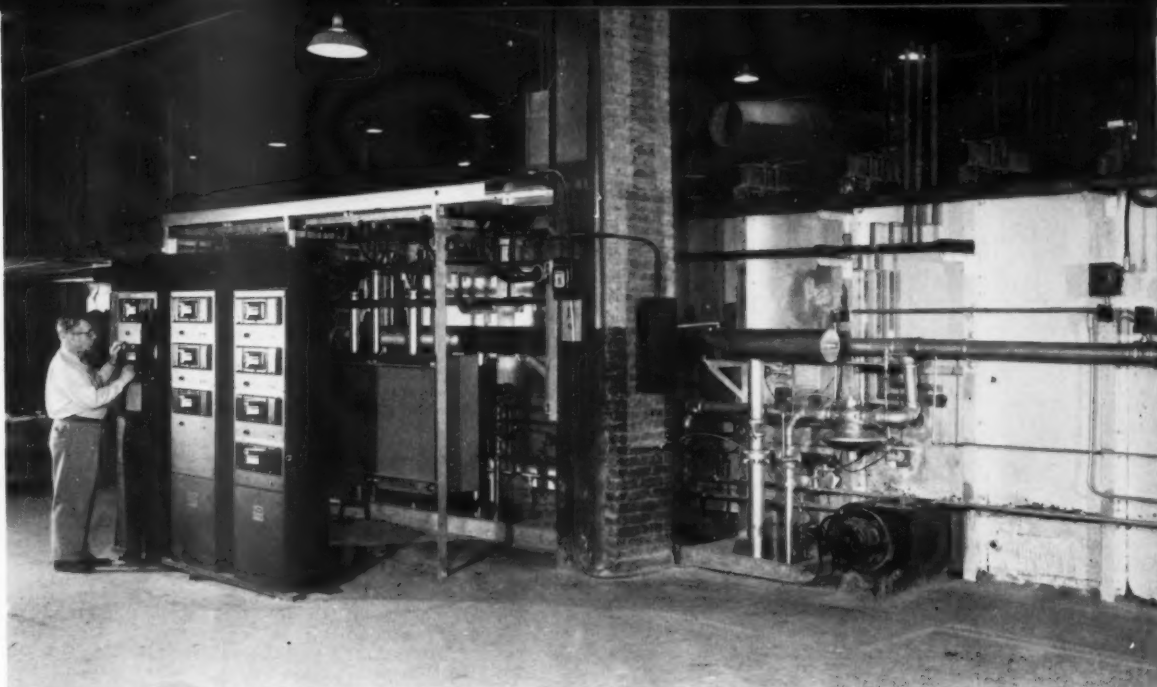
Although the company expects to be producing a variety of other products later, this article will concern itself with the production of ceramic coated corrugated sheets and the very specialized production of

Electrostatic spray booth with conveyor feeding ware from right. The gun control board in the center controls each gun for: fluid flow, atomizing pressure, shut-off valve (controlled by electric eye). Operator stands at the control panel for the electrostatic system.

SEPTEMBER • 1955 *finish*



This photograph shows various feed lines and controls for the furnace which was rebuilt to give desired heating cycle. The control center for the furnace, the operator stands at a recording thermometer which shows temperature at six points within the firing chamber.



chalk boards for which there is apparently an ever increasing market.

Approximately 80,000 square feet of corrugated sheets 30" x 72" up to 30" x 144" in size and in 20 gauge were coated by Benjamin and shipped to Youngstown Sheet & Tube where they have been placed on exterior of mill buildings. This, of course, presents a more severe weathering and corrosion resistance test than would be expected under most normal conditions of use.

The corrugated sheets in lengths of 6, 8 and 12 feet were passed down the conveyor line only a fraction of an inch apart, electrostatically coated, dried and fired. They were taken off the furnace chain, inspected and packed in one operation. The coating was only 2 to 4 thousandths thick

applied both as a one and two-coat finish. The extreme thinness permits drilling, punching and sawing as required for installation.

To follow the routine of application we will select the chalk board (called chalk sheet before lamination) for a step by step description. To one accustomed to visiting porcelain enameling plants there is certainly nothing very complicated about the process for using low temperature ceramic coatings. The operation is streamlined and has been made to appear extremely simple through the use of the latest in modern processing equipment.

Cleaning and pickling

A continuous cable conveyor machine is used for the cleaning and

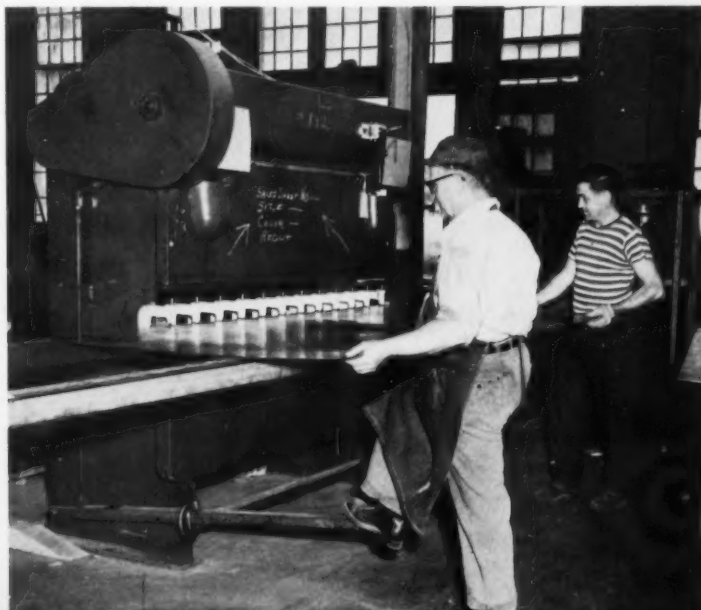
pickling operation. The standard pickling procedure as used for high temperature porcelain enameling is used except that the nickel has been boosted from 5 milligrams to 17 milligrams per square foot. The nickel solution is carefully filtered through the use of modern filtering equipment. The conveyor for the pickling machine travels four feet a minute. Applications of solutions are by top and bottom spray.

In using the lay down type of pickling machine, it was found desirable to "bow" the large sheets to the center in order to minimize carry-over. It was also found desirable to avoid excess deposit from neutralizer. Pickled flat ware is trucked to the loading point where it is inspected and hung on a monorail.

Right: Holes for hanging chalk sheets on monorail conveyor system are pressed in this press brake using 12 self-contained piercing units.

finishphotos

Below: Continuous cable conveyor machine used for cleaning and pickling operations.





Transferring chalk sheets from spray conveyor line to furnace chain. The low temperature ceramic coating is fired at 1200° to 1250°F. and the resulting finish is a soft matte green.

Finish applied electrostatically

The production line is equipped with staggered electrostatic booths which can be set up to spray one coat on both sides of the sheet if desired. The spray booths are equipped with electric eyes and time delay relays for starting and stopping the guns as ware enters the electrostatic spray area.

The relay is carefully timed to actuate a series of spray guns to start spraying just as the leading edge of the ware enters the spray pattern and continue in action until the trailing edge is clear of the spray. The spray dispersion is approximately two feet wide per gun. The guns start spraying approximately one foot before the edges of the piece are abreast of the guns. The wet sprayed pieces continue through the dupli-

cate booth facing in the opposite direction where a similar set-up coats the reverse face of the ware. A touch up booth is provided where additional hand application can be employed in the event the shape of the piece makes this desirable.

In running chalk sheets the base or ground coat can be electrostatically sprayed with the ware continuing on for first fire and then returning to the alternate booth for the second application (green coat). There is an interesting innovation in the feed of the liquid material to the spray gun. Inasmuch as the guns are placed in line vertically, there is a natural tendency for the delivery to the guns at different heights to vary. This has been controlled by the use of restrictive plugs with the degree of restriction varied by the height of the gun.

One precautionary measure was noted by supervision in that operators accustomed to spraying heavier coats of porcelain enamel must be trained to spray the thinner coatings.

It has been the experience at Benjamin that the very finely ground low specific gravity finishes are affected to a greater extent by high humidity, and this must be taken into consideration in setting up the process.

From the spray area the sheets advance to a transfer area where they are moved to the furnace conveyor.

Furnace converted for close control

For the application of the lower temperature ceramic coatings such as porcelain enamel for aluminum (approximately 950-1000°F.) and the low temperature coatings as used at Benjamin (1100-1250°F.), consideration has been given to the desirability of close control of temperature curves through the application of re-circulating systems to furnaces or the use of high temperature "ovens" with infra-red or convection heat sources or a combination.

It so happens that Benjamin has the second oldest continuous porcelain enameling furnace in the United States, one of the two original "Bemac" counter-flow type installations. It was decided to convert this furnace for low temperature application by eliminating the counter-flow feature, dividing the pre-heat zone in the center to form dual zones

Cleaning and Pickling

Tanks	Solution	Temperature	Time
Cleaner	1-1½oz/gal.	180°-190°	3 minutes
Hot rinse		140°-150°	1 minute
Rinse		Cold	1 minute
Sulfuric acid	7-9% H ₂ SO ₄	160°-170°	3½ minutes
Rinse		Cold	1 minute
Hot rinse		140°-150°	1 minute
Nickel flash	1½-2oz/gal. pH — 3.0-3.5	160°-165°	3 minutes
Acid rinse	pH — 2.5-3.0	Cold	1 minute
Neutralizer	Na ₂ O — 2.0-2.5	140°-150°	2 minutes
(Caustic — soda ash)			
Dryer		160°-170°	2 minutes
(Forced air over steam coil)			

Recirculating pumps on all hot solutions — 150 gal. per minute



This set-up is for cutting backing panels to proper size for matching chalk sheets. A panel saw (background) cuts to length; a table saw (foreground) cuts to width. Note the exhaust system for removing dust.

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Following the application of adhesive to chalk sheets and backing board they are placed together to form the chalk board and fed through laminating rolls. One operator (not shown) is feeding chalk board to the rolls which effect a pressure of 75-lbs. psi.

and by installing other refinements for closer control of the heating and cooling curve. The furnace is heated by a combination of gas burners and electric booster elements. Air curtains have been installed to extend the effective length of the top of the heating curve. Separate temperature controls are provided for each gas burner and on each bank of electrical elements. Both drying and firing are accomplished in a "straight through" tunnel 174 feet in length.

In the case of corrugated sheets, the ware is inspected off the furnace chain and into waiting crates.

Chalk sheets are transferred to an especially lighted booth where the sheets are inspected for imperfections, color uniformity, matte, texture, etc.

For hanging the large chalk sheets on the conveyor, holes are provided on 6 inch centers $\frac{3}{8}$ " from the edge along one side only (these holes are covered by trim when the assembly is completed). Providing these holes is a very simple operation on a press brake with a single strike for 6 foot and shorter sheets and two strikes for sheets over 6 feet.

Low temperatures eliminate warpage on light gauges

While the 22 gauge steel used for the chalk boards is only half the weight of 18 gauge which has been used for chalk boards produced with standard temperature porcelain enamels, production going through at Benjamin is free of any tendency

to warping, even when the application of the coating is on one side of the sheet only.

The freedom in choice of gauge of sheet steel is an extremely attractive feature of the low temperature coatings.

Hot strength curves for various common steels indicate that when steels are heated from 1100-1250°F. (the maturing temperature of these coatings) to 1500-1550°F., that they lose $\frac{4}{5}$ of their tensile strength. Where structural strength of the product does not demand heavy gauge, as in the case of laminates, the steel used may be dropped in gauge from 16 or 18 to 22 or 24.

Benjamin Electric accomplished this

to Page 93 →

Adhesive is applied to the backing board in this 10-foot spray booth. The easel for holding the board is installed on 2-inch pipe riding in $2\frac{1}{2}$ -inch pipe so that it can be pulled to the front for loading.

finishfotos



A floor truck load of from 12 to 15 crated chalkboards is being raised by elevator to the proper height for direct loading to a high way truck for shipment.



**FIRE THIS NEW LEAD-FREE
1250°F LIFETIME ENAMEL
ON NON PREMIUM STEEL
OF ANY GAUGE**

**AUTOMATIC PROCESSING WITH
PORCENELL COATING**

(Right) Continuous firing line operated by Benjamin Electric Mfg. Co. to fire an even coating of Porcenell to corrugated siding. Monorail carries 27" x 144" panels through fully automatic spray booth to firing and drying tunnels.

PORCENELL . . . BACKGROUND

Porcenell is the result of 15 years of research devoted to the development of an inorganic, ageless finish designed to give ferrous metals a priority position in industry's fight against corrosion. It is a development of Vitreco, Inc., a research company owned jointly by Poor & Company, Chicago and Youngstown Sheet & Tube Company, Youngstown, Ohio.

PRESENT AND POTENTIAL APPLICATIONS

An appraisal of the future for the Porcenell coatings can be gleaned from the following partial list of diversified applications.

- **Architectural:** Exterior use, two coat AA Acid Resistant Porcenell available in all ceramic colors. Limitations on panel size and steel gage are no longer imposed by the coating. Interior use, pastels and deep colors available in one coat. Coating is compatible with any gage and width down to 32 gage—panels stay straight.
- **Home Laundry:** Exterior and interior application. Two coats provide alkali resistant finishes where needed. Porcenell can be applied on assemblies such as cabinets, frames, spinner drums despite welded construction. Sides and flanges stay flat!
- **Cooking and Heating:** On domestic cooking units, two coats give bright whites, high gloss, AA acid resistance, high abrasion resistance. Freedom from warpage permits faster, safer assembly.
Covers spot and seam welds. Has high resistance to thermal shock. The thin coat (.003" to .005") drastically reduces possibility of damage during assembly or shipment.
- **Air Conditioning and Refrigeration:** Good color, acid resistance, and edge coverage, provides protection to louvers, bottom pans and raw edges never possible before. On refrigeration, whole outer cabinets designed for paint can be finished with Porcenell. Roll formed metal breaker strips are feasible with Porcenells!



Announcing Porcenell®

Here's why this durable, proven low fire ceramic finish is opening new markets to the porcelain enamel industry

Porcenell, a thoroughly *proven*, low fire ceramic finish, has opened entirely new applications to porcelain enamel. It represents the successful culmination of the long trend toward a porcelain enamel that would fire below the alpha critical of steel. Because it matures at 1250°F (well below the alpha critical of steel) it can be production applied to a great number of parts and finished assemblies previously denied the advantages of a porcelain enamel finish.

Porcenell brings to the entire metal finishing industry a coating which completely meets the familiar and established standards of the high fire porcelain enamels without requiring their characteristic high expense for tooling, furnace maintenance and premium steel.

Existing porcelain enameling equipment and techniques can be employed on Porcenell. Because its adherence is principally controlled by formulation rather than high-fire oxidation, the enamel can be fully matured and fused at temperatures at which the tensile strength of steel is 4 to 5 times that retained at the firing temperatures of conventional porcelain enamels. Since, too, its adherence is not dependent upon the cobalt-nickel manganese metals, two basic and welcome production freedoms are offered by Porcenell:

Freedom from the "enamel iron extra."

Freedom in choice of colors for the ground coat.

With Porcenell it is now possible for alert management to secure a basic competitive advantage—to offer the

undisputed durability, hardness and beauty of porcelain enamel at production costs comparable to that of competing, but less durable, metal finishes.

Here are a few of the outstanding features of low fire Porcenell coating.

THIN COATINGS for two coat ware reduce material and shipping costs.

LOW FUSING TEMPERATURES . . . below 1250°, eliminate need for premium steel—save on cost of tooling, maintenance and fuel. Eliminate boiling over weld areas. Reduce warping, hairlining and strainlines in fabricated assemblies.

DOES NOT BURN OFF EDGES, permitting the same flexibility of design permitted by organic finishes.

HAND OR ELECTROSTATIC SPRAY application opens the way to less expensive application methods.

CAN BE SAWED, SHEARED, DRILLED OR PUNCHED without excessive chipping and without material effect on protective qualities.

COVERS SHARP EDGES and corners to provide protection and decorative beauty in areas where porcelain has not been practical.

OPENS NEW FIELDS for design engineers to specify lasting protection and beauty for corrosion-abrasion subject products.

NO REDESIGN necessary in many instances on parts intended for synthetic coatings.

Look these features over, compare them, and write for further information on how Porcenell can be put to work for you.

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851 S. Market St., Waukegan, Illinois

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The principal elements for a successful trade association

by *George P. Lamb* • CANN, LAMB, LONG & KITTELLE, WASHINGTON, D. C.



The modern day trade association is recognized by business and government as essential to the functioning of our dynamic economy. Testimony of the businessman to this fact is demonstrated by the constant growth of the trade association movement. Testimony of government may be taken from the recent endorsement of associations found in the report of the Attorney General's National Committee to Study the Antitrust Laws where it says: "Antitrust requires distinguishing constructive trade association activities operating to promote competition from those which unduly limit competition among members or with outsiders. . . If their activities actually tend to promote, rather than hinder, competition and preserve the individual firm's independence of decision, antitrust should not inhibit their growth."

There are four principal elements

in the operation of a successful trade association: (1) a sound and constructive program of activities well within the antitrust laws; (2) leadership by a paid trade association executive who subscribes to the competitive system with a background knowledge of the antitrust laws; (3) cooperation by all of the members in complying with the law; (4) acceptance of advice from counsel on all legal matters.

Most well-run trade associations include in their activities industry-wide composite statistics, government relations, product promotion and advertising, credit information exchange, research, industrial relations and a number of other activities depending on the size and type of association. The program of the trade association can be tailored to fit the needs of the industry and the association's budget.

The executives must participate

The association's basic program must include those activities which

will justify the attendance at meetings of top executives who come from long distances. The basic program of an association can be supplemented under appropriate circumstances by other activities which are reasonably safe for some industries but dangerous for others. Examples of these activities include price reporting, cost studies, standardization of products, uniform contract forms and discussions of trade practices. The degree of antitrust danger is greater in those industries which manufacture and sell homogeneous products as distinguished from items which are not identical as to specifications. For example, the danger is greater in industries that sell sugar, cement, steel, oil and paper as contrasted with automobiles, refrigerators, stoves, radios, television sets and washing machines.

The successful trade association must be lead by a paid trade association executive of outstanding talents. In his ideal form the trade association executive should combine the

George P. Lamb currently is counsel for fourteen national trade associations including The American Home Laundry Manufacturers' Association and the American Institute of Wholesale Plumbing and Heating Supply Associations. He is a member of the Bar Association of the District of Columbia and American Bar Association.

Member, American Bar Association Committee on Trade Associations (Chairman 1950-51); chairman, American Trade Association Executives Committee on Legal Aspects of Trade Associations, 1950-1951; member, National Industrial Council Committee on Federal Trade Commission; member, Trade Association Committee of Chamber of Commerce of the United States, 1954-55; member, Attorney General's National Committee to Study the Antitrust Laws.

Author of "Trade Associations and the Future," American Trade Association Executives Journal, Spring Issue, 1950; co-author of "The Implied Conspiracy Doctrine and Delivered Pricing," Duke University's *Law and Contemporary Problems*, Spring Issue, 1950; lecturer, National Institute for Commercial and Trade Organization Executives, Northwestern University, 1950-55; lecturer, Northeastern Institute, Yale University, 1955; guest lecturer, American and George Washington Universities, 1950-55; Ohio State University, 1950; University of Michigan Institute on Federal Antitrust Laws, 1953; Practicing Law Institute, New York, 1952; keynote speaker, American Bar Association, Antitrust Section, Washington, D.C., 1955.



attributes of an economist, statistician, promoter, salesman, public speaker, writer, lawyer, engineer, teacher, "Duncan Hines," maitre d'hotel, psychologist, psychiatrist, clairvoyant, politician and wet-nurse. A full measure of all these characteristics in a single human being might endow him with the explosive properties of the hydrogen bomb, hence it is perhaps fortunate that most trade association executives are normal, down-to-earth people who fall somewhat short of the abstract ideal. Nevertheless, a successful trade association executive does combine in greater or lesser degree the attributes listed.

It is difficult to find any common denominator for the trade association executive. A study of their biographical sketches reveals that most have come either from the newspaper field or were sales managers, salesmen, economists, lawyers, engineers, chamber of commerce secretaries or government employees, either military or civilian. Perhaps their only common characteristic is that each is and must be an individualist.

Membership participation is indispensable

The success of the trade association depends in no small measure upon the quality of its membership. Participation by the members in one or more activities is indispensable. Most of today's trade associations function through the committee system, thereby giving those with diverse talents opportunities to serve in one or more capacities. Equal distribution of talent is sometimes difficult in view of the non-availability of sufficient personnel from the smaller companies. Most large companies are generous in providing their technicians to serve on such committees as industrial relations, sales promotion and the like. It is not infrequent that the president of a small company combines all the talents which are usually divided among several individuals of a larger company. Notwithstanding, the contribution of the chief executive of the small company is considerable due primarily to the broad experience which most of these executives have in operating their

own particular companies.

Standard of conduct

Standards of conduct of trade association members should include the following:

1. Members should attend only those meetings of competitors which are held under the sponsorship of the association.
2. Members should not attend or tolerate rump meetings.
3. Members should attend no meeting without an agenda.
4. Members should avoid price discussions at meetings except for general economic trends.
5. Members should not reach agreements or understandings, tacit or otherwise on doubtful subjects.
6. Members should insist that minutes be kept of all meetings.
7. Members should insist on the use of language in minutes and correspondence which precisely reflects the truth of any given situation.
8. Members should protest orally, and if necessary in writing, all known illegal activities.
9. Members should check with their company counsel on doubtful subjects in advance of association meetings.
10. Members should cooperate with association counsel in all matters, particularly where counsel has ruled adversely on any activity.

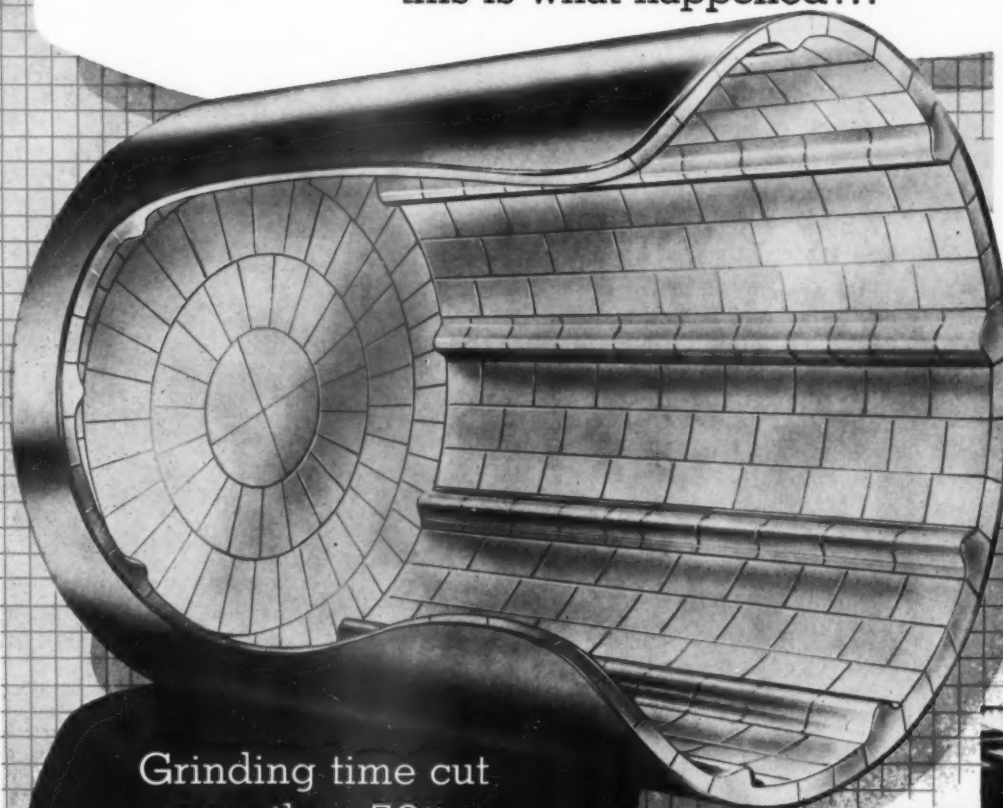
Acceptance of these minimum standards by the trade association member will go a long way toward protecting the association from anti-trust violation. In order for the trade association to be successful it must, insofar as possible, assure its members that it will function within the antitrust laws. Practical safeguards must therefore be established to insure the maximum of compliance with the law.

The final element of a successful trade association is the acceptance of advice from counsel on all legal matters. The history of the evolution of the trade association is studded with prosecutions for engaging in activities such as price fixing, allocation of production, arbitrary classification of customers and boycotts. The trade associations of the middle

1920s and early 1930s thought that they could exist and thrive without the advice of counsel. Many of them had to go out of existence after having been prosecuted by either the Antitrust Division of the Department of Justice or the Federal Trade Commission. Today's trade association recognizes the important part which must be played by counsel specialized in trade association law. Counsel for the association should be active, not counsel in name only. Familiarity with the activities of the association can be gained only by attendance at meetings and a constant review of the activities of the association. Even with this safeguard there has been a pessimistic attitude exhibited by the large corporations toward membership in trade associations. Not infrequently counsel for the large company has taken the position that the risk of membership is too great. Some such counsel have taken the position that it is almost impossible to operate a trade association without being prosecuted. Their position has been supported by the growth of the theories of "planned common course of action," "conscious parallelism of action," and "guilt by membership."

In 1950, I characterized the prosecution theory as follows: "On one pound of uniformity of price sprinkle a level tablespoonful of delivered pricing or other common marketing practice, and add one trade association. If a handful of letters is available indicating price discussions among competitors, add them by all means; otherwise omit as unnecessary. Stir well, add a pinch of semantics about 'conscious parallelism of action,' and serve garnished with imprecations against the motives of American businessmen. The result will pass muster among the Federal Trade Commissioners as a tasty dish of conspiracy, and it is rare that anything approved by these chefs will not to be swallowed and comfortably digested by the courts." Fortunately this attitude by the prosecuting agencies has changed in recent years. The climate for the operation of a successful trade association is much better today than it has been for the past 25 years.

When Norris-Thermador
relined a 5' x 6' mill with *Coors*
high density lifter bar brick,
this is what happened...



Grinding time cut
more than 50%
Frit charge increased 25%

GLEN FULTON,
Enameling Dept.
General Foreman,
Norris-Thermador
Corporation



"Since we relined our 5'x6' mill with Coors High Density Lifter Bar Liner Brick, the time required to obtain the necessary fineness of grind has been cut 50 to 65%, depending upon the type of frit. Also we have been able to increase the frit charge by 25%. Apparently the increased ball action caused by the Coors Lifter Bars is responsible for more than doubling the production from this 5'x6' mill, because no other changes were made in this operation," Glen Fulton, General Foreman, Enameling Department, Norris-Thermador Corporation.

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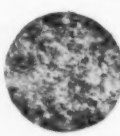
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A key component in Pennsalt's all-new Fosbond® Process is Actidip. Proper use of this extraordinary activating agent can cut consumption of zinc phosphating solution as much as 40% by reducing crystal size—and also assure a better, smoother organic finish. Because the phosphatizing bath is the major expense item in a paint-bond process, the reduced consumption possible with a Fosbond cycle including Actidip therefore can save thousands of dollars annually for any major user!

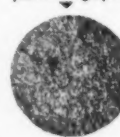
In many other ways, the Fosbond Process is just as noteworthy. It consists of a complete series of products and operations for *trouble-free* phosphatizing of metal prior to organic finishing. Fosbond locks finish to metal, and provides lifetime corrosion resistance. To get the process working smoothly in your plant *and to keep it that way*, Pennsalt offers the services of metal processing specialists.

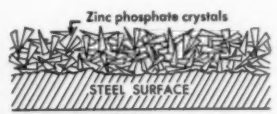
Like To See Test Panels? Prove to yourself just how good Fosbond is! We'll send you test panels, or Fosbond chemicals with which you can make your own. Tell us, 1) type metal to be coated, 2) phosphate coating now used, 3) method of application, 4) organic finish used, 5) conditions finish must meet. Or, tell us about your phosphatizing operation, and we'll answer your questions as specifically as possible.

Better yet, say the word and we'll have one of our men tell you about Fosbond in person! Write: Customer Service Dept., Pennsylvania Salt Manufacturing Company, Three Penn Center Plaza, Philadelphia 2, Pa.

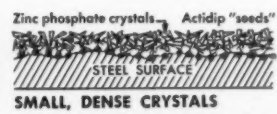


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photomicrographs





LARGE CRYSTALS
on non-activated surface



SMALL, DENSE CRYSTALS
on Actidip-activated surface

How Actidip Works

Zinc phosphate crystals begin "growing" on steel from a starting point or nucleus. On a non-activated surface, growth is uncontrolled. Result: large crystals, high consumption of phosphatizing solution, irregular surface requiring more paint to cover.

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The use of Actidip on certain steel surfaces which won't take an adherent phosphate coating has actually made it feasible to produce good coatings on these surfaces.

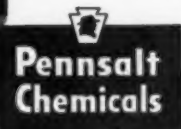
Actidip is applied by spray or immersion methods—by itself or compounded with a Pennsalt Cleaner. Actidip baths have long life and require no chemical control as the action of Actidip is a physical phenomenon and involves no chemical reaction. For best results, Actidip should be used in a Pennsalt-designed Fosbond cycle.



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September • 1955

**9TH ANNUAL
SPECIAL SECTION**

HOME LAUNDRY EQUIPMENT INDUSTRY

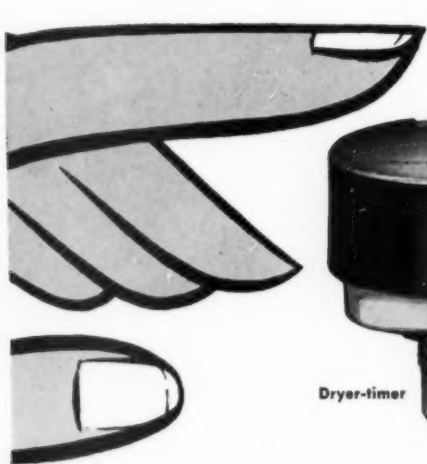
Finish

THE MAGAZINE OF
Appliance AND
Metal Products MANUFACTURING

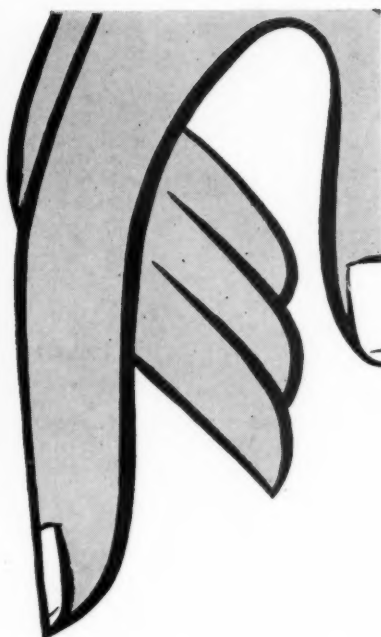
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Home Laundry Equipment Industry Special Section

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Still Dynamic . . .

Still Moving Forward

Last year we opened our brief editorial on this page with the heading, "Still Dynamic . . . Still Moving Forward." In dedicating this Special Section, the ninth in our annual series, to the Home Laundry Equipment Manufacturing Industry, it is a pleasure to report that the industry is "Still Dynamic — Still Moving Forward."

Over thirty manufacturers of washers, ironers and dryers built a total of 4,474,168 units during 1954, thus surpassing the prediction made in this special section last year by industry leaders — that 1954 would be another four million unit year.

If the preceding two paragraphs have a familiar ring, it's possible you read the same statements in this column last year, except for necessary adjustments of dates and production figures.

While manufacturers of many types of appliances and metal products enjoyed an excellent year in '54 and are showing worthwhile gains for '55, the home laundry industry has succeeded in forging ahead of the average for the industry and proving its right to the description "dynamic." Our editorial report on AHLMA activities will give some idea of what to expect at the end of 1955.

Individual manufacturers aren't riding on their records but instead are pushing design and engineering developments in an effort to hold their positions in the field and, collectively, to hold the business percentage gain over other products for the home.

We may expect to see new product developments for '56, and if as is expected the tone of optimism continues, and industry, educational and promotion activities are maintained at a proportionately higher level, it seems entirely possible that the home laundry equipment manufacturing industry can continue to spearhead appliance sales gains.

Dana Chase

EDITOR AND PUBLISHER

Home Laundry Equipment Sales — First Six Months

	1955	1954	1953
Washer Sales	2,090,813	1,662,100	1,828,977
Dryer Sales	531,918	293,970	263,201
Ironer Sales	43,264	44,808	98,981
	<u>2,665,995</u>	<u>2,000,878</u>	<u>2,191,159</u>

Porcelain enamel can help you sell more!

WASHERS | DRYERS



Lifetime beauty can be a real selling feature... especially in a competitive market and with such appliances as laundry equipment.

And it costs but little more to put it into your products, to give users *all* the advantages of ageless *Porcelain enamel*. Not only is Porcelain enamel immune to wear, stains and scratches, but it offers the ultimate in ease of cleaning—all strong selling points with the women who buy this equipment.

If you haven't already gone to Porcelain for the vital "insides" of your products, we would recommend you look into this, also. Again, relative costs may surprise you... and here, too, Porcelain enamel can help you build extra sales.

Designers will do well to consider Porcelain enamel in their plans for "best sellers". While there is nothing difficult about it, you do have to *plan* for Porcelain enamel. Can we help you with these plans?

PORCELAIN ENAMEL belongs in your SALES PLANNING

Only Porcelain enamel, the *fused-in* finish, gives you all these advantages:

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2. Rust and corrosion resistance
3. High alkali and acid resistance
4. Easy cleaning and low maintenance
5. Long wearing, tough, durable
6. High heat resistance
7. Wide consumer acceptance



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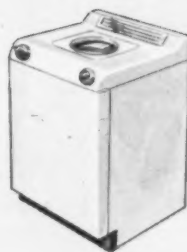
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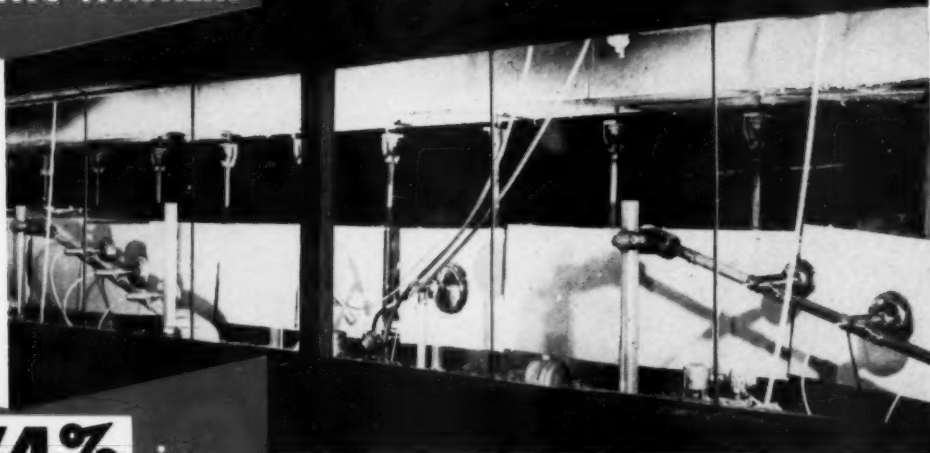
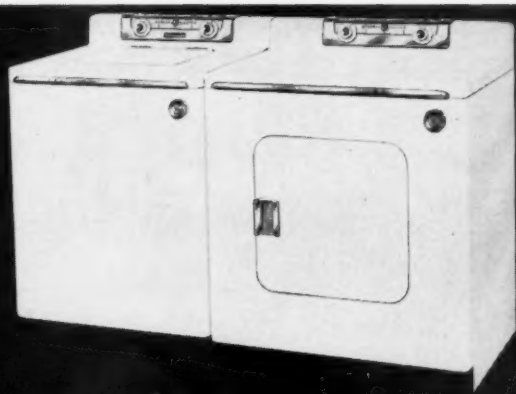


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NO. 2 PROCESS**
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84%

in the finishing of
G-E AUTOMATIC WASHERS



...and **74%** in
finishing **G-E DRYERS**

Production is increased and quality of the work is improved over former hand spray method

● When General Electric formerly hand sprayed their home laundry equipment—automatic washers and dryers—they painted 9.74 washers with a gallon of paint. Now, in the new and modern plant at Appliance Park, Louisville—where they're using the Ransburg No. 2 Process—they get 17.97 units per gallon of paint. An increase of 84%!

And, where they formerly got 5.49 dryers per

mixed gallon of finish, now—with the Ransburg No. 2 Electrostatic Spray Process—they get 9.56 dryers per gallon of paint. An increase of 74%!

Along with increased production, G.E. is getting a more uniform, higher quality finish. Another typical, on-the-job-example of the unmatched efficiencies of the Ransburg No. 2 Process of electrostatic spray painting!

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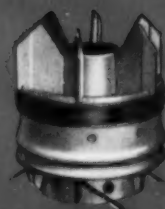
A COMPLETE SERVICE — FROM BLUEPRINT TO SHIPPING CARTON



Press formed and electrically welded steel window



Stamped and Assembled Bomb Fin



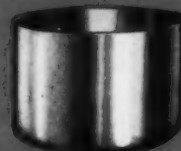
Completely Assembled Rocket Fin



Stamped, Finished and Packaged Christmas Tree Stand



Stainless Steel Humidifier Pan



Deep Drawn Tub Stamping



Tractor Seat



Toy Tractor

AHLMA meets at Hot Springs

American Home Laundry Manufacturers' Association holds another mid-summer session in an atmosphere of optimism for the future

IN our report last year from Mackinac on AHLMA's summer meeting, we started with the statement, "Optimism about business in general, and about rising sales for the last half of this year specifically, prevailed at the semi-annual meeting . . ." This statement could well be repeated in describing the general atmosphere of the 1955 summer meeting at Hot Springs, Va., where, as customary, the Associate Members served as hosts.

Chairman of the Associate committee planning the summer meeting was J. A. Kavas, Dole Valve, with R. M. Buddington, Inland Steel, as

vice chairman. Other committee members were D. B. Anderson, Nagel-Chase; A. F. Boone, Mullins; C. C. Daily, Firestone; J. D. Delanty, La-Salle Steel; J. J. Goodwillie, Dole Valve; J. H. Ingersoll, Ingersoll Products; H. C. Kunkelman, Bliss & Laughlin; Pierce Sperry, Sperry Rubber & Plastics; and Ralph Thomas, Meyercord.

President Reeve predicts continued sales increase

At last year's meeting, AHLMA president W. Homer Reeve, of Easy Washing Machine Corp., predicted that the year 1954 would show 4,

000,000 home laundry appliances going into American homes during the 12-month period. It must have been a pleasure for him to stand before the same group this year and report that factory sales for 1954 totaled 4,474,168 units.

In his report this year, president Reeve stated that plant expansion is continuing and that industry-wide surveys point to a much higher sales figure for 1955. A survey conducted the first quarter of this year showed an expected 4,500,000 to 4,800,000 units as the probable sales figure. A later survey made in early July, however, presents a more optimistic figure with the median of forecasts showing 5,300,000 units. (See complete outline of the president's report starting on page HL-13.)

Feeling seems to be quite general that the optimistic forecasts are well in line unless work stoppage in a principal plant or two in the industry were to become sufficiently important in time and quantity of production to throw industry figures out of line for the last half of the year.

A graduate school of business

George P. Lamb, of Cann, Lamb, Long & Kittelle, general counsel for AHLMA, contrasted the reputation and functions of some of the early trade associations with today's modern concept of what an association should be.

The modern association, said Lamb, is a "graduate school of business" — a sound basis for disseminating information.

Lamb referred to the great increase in mergers as one of the most serious problems in the anti-trust

Left to right: Dr Kenneth McFarland, who spoke on "Lamp Lighting Leadership"; J. H. Ingersoll, member of the planning committee for AHLMA's summer meeting; and W. Homer Reeve, president of AHLMA.

finishfoto





The Homestead, Hot Springs, Virginia, scene of summer meeting of American Home Laundry Manufacturers' Association.

picture. He pointed to the fact that some mergers placed smaller companies in a better position to compete favorably with their larger competitors. This class of merger, he said, should *increase* competition and therefore be in line with anti-trust purposes.

Lamp lighting leadership

J. H. Ingersoll introduced the featured speaker for the Monday session, Dr. Kenneth McFarland, educational consultant to General Motors, advisor

to management, educator and lecturer to management groups.

Dr. McFarland was recently honored for "making the largest contribution to advancing free private enterprise" and the home laundry people hearing his story and presentation, "Lamp Lighting Leadership," would most certainly agree that there would be ample reason for him to receive this honor.

GAW developments

An interesting panel discussion

followed by a question and answer period was held on Tuesday with a panel consisting of Frank Rising, general manager, Automotive Parts Manufacturers Association; Owen Fairweather, partner of Seyfarth, Shaw & Fairweather; and Carroll Daugherty, chairman, Business Economics Dept., Northwestern University.

According to RISING, the Ford and General Motors plans are not likely to be the forerunners of widely accepted plans for other industries.



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"Lay-off insurance" is what present plans represent, *not* guaranteed annual wage.

A nickel of wages was deferred and put into a "lay-off fund."

There is as yet no pattern forming along the lines of Ford-G.M.

This is the first time that politicians, editors and opinion-formers are on the sidelines.

No one can see where we will come out — there is no general trend.

Wage increases have become a minor part of negotiations and fringe benefits the important factors. This could cause a crack-up as people like to manage their own money.

Incomes for skilled and common labor are getting closer together with each across-the-board increase.

Said Rising, "I dislike suspicion and hostility between different industries and even companies in the same industry in connection with labor relations." There could be much more consultive cooperation *without* destroying the right of the individual company to deal individually.

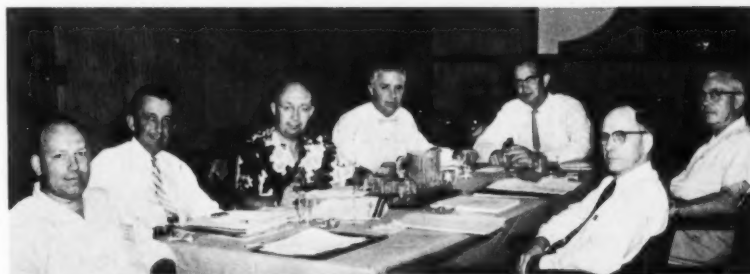
DR. CARROLL DAUGHERTY referred to the "GAW" plan, such as those of Proctor & Gamble and Hormel, as saddling an industry with a "fixed" cost.

The Ford-General Motors plans, he said, put a premium on stabilization of the labor force. Personnel-wise,

This trio includes GAW panel speakers Rising, Daugherty and Fairweather.

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Meeting of AHLMA's Parts & Service Committee.



the effect could be (1) to have employees that can be transferred from slack to busy departments, (2) encourage better selection methods for versatile employees, and (3) better training methods.

Other resulting trends in relation to production and sales could be (1) producing for stock (warehousing) which is not physically or economically possible in some fields; (2) production of products which complement each other for different seasons.

In his discussion, FAIRWEATHER had an interesting term for the policy of riding on unemployment in pre-

ference to working at slightly greater income. His term is "malingering."

Social activity, too

As is customary at the AHLMA summer meetings, the Associate group planned well for the entertainment of both the male members and the many wives who make it a point to join with their husbands in the summer meeting. The weatherman was good, with plenty of clear weather for golf and such interesting evening past-times as dinner and dancing under the stars.

Session on "fringe benefits", sponsored by AHLMA's Industrial Relations Committee, drew a capacity attendance.

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NOW... Firestone Offers a New Service to Help Lower Production Costs

Firestone Techni-Service has long been an important factor in helping solve design and specification problems for rubber and rubber-to-metal parts in Home Laundry Equipment and other home electrical appliances. Now, it has been expanded to include a new and unique service, a *team production analysis procedure* that can materially lower production costs.

Working with your engineers, a Firestone Techni-Service team can spend sufficient time in your plant to study every assembly operation in which rubber and rubber-to-metal parts are used. They will review your specifications and the function of each part to determine its proper use for each application. They may find you are specifying more expensive parts than are necessary to perform their required function. After a thorough analysis, they may be able to make recommendations that will materially lower production costs of the appliances made in your plant.

Other appliance manufacturers are scheduling specific dates with the Firestone Techni-Service analysts. In these competitive days, when every cent of production cost is important to your salesmen, it will pay you to get in touch with Firestone at once to schedule a "team day" at your plant. Whether or not you use Firestone rubber and rubber-to-metal parts, you can schedule this service with no obligation. Write now to:

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AKRON 17, OHIO

The future of the home laundry industry

a discussion of the outlook for the home laundry appliance manufacturing industry, important problems to be considered and the available equipment for meeting them

by *W. Homer Reeve* • PRESIDENT, AMERICAN HOME LAUNDRY MANUFACTURERS' ASSOCIATION;
AND PRESIDENT, EASY WASHING MACHINE CORPORATION

IN order to appraise the outlook for the home laundry appliance manufacturing industry, let us look briefly at the setting in which we are doing business today.

Certainly the most significant factor which affects us today is the unprecedented trend in population growth. It is people living together in families who are the markets for washers, ironers and dryers.

Just this summer the population of the United States passed the 165,000,000 mark! Population is growing at the rate of 2,500,000 persons a year, creating an annual *new demand* for equipment for some 300,000 additional households.

Consumer demands, coupled with technological progress, make the business outlook as far ahead as 1960 optimistic.

Now, observe that in addition to these great increases in population, we have had, amazingly enough, continued very high employment. Toward the end of World War II we laughed at the idea of 60,000,000 jobs, yet employment has scarcely fallen beneath that level for nearly five years. In 1954, it was 61,238,000, and in 1953, 62,213,000. The fact that nearly every available wage earner is employed is obviously a good omen for those of us who sell to consumers.

When these conditions are joined with widespread high earnings, it is even better for the appliance industry. And that has been just the case! The Department of Commerce recently reported that there is a con-

tinued shift of families moving toward higher income brackets. The gain in the number of families with



W. HOMER REEVE, AHLMA PRESIDENT

personal income from \$2,000 to \$5,000 was only 1% between 1944 and 1953, whereas the gains in the number of families in the \$5,000 to \$10,000 bracket was 182%, and in the \$10,000 to \$15,000 bracket was 222%. Today there are over 21,000,000 families with income in excess of \$5,000 annually.

Income up, consumer prices steady

Per capita disposable income has continued to rise since the middle of 1954.

There are many people! Employment is high! Good earnings are enjoyed by increasingly more families!

Consumer prices, however, have held steady since 1952 at about 114% of the 1947-1949 averages.

Thus, while families tend to earn more, they are also able to buy more with what they earn. Our country is becoming continually more productive, and we are devoting somewhat less of our national output to defense than we did even three or four or five years ago. Investments in plants and equipment, technological improvements and the thought and energy of over 60,000,000 workers are actually producing more goods and services for us to divide.

The prospect for 1955

— greatest industry year

Our standard of living is rising, and the opportunity to expand will continue well through 1960! It is not surprising that in this setting the home laundry appliance manufacturing industry is enjoying over-all production which may lead to the greatest year in our history. Factory sales of washers, ironers and dryers are running 34% above a year ago. If these gains continue throughout 1955, we may reasonably expect the largest year in our history!

The previous high year was 1950, when just over 5,000,000 washers, ironers and dryers were shipped from our factories.

A survey which we conducted in the first quarter of 1955 indicates that our market research people expected between 4,500,000 and 4,800,000 home laundry appliances to be sold when they made the forecast in the beginning of the year. At that time they expected a good year but not a peak. →

A survey made in early July, however, indicates that our industry's forecasters have raised their sights considerably. The most optimistic fellow last March forecast 1955 totals of 4,825,000 washers, ironers and dryers. Now the highest forecast in the industry is 5,580,000 home laundry appliances. The median of the July forecasts was 5,300,000, and all but two of the forecasters predicted that 1955 would be greater than the 5,000,000 home laundry appliances sold in reaching the 1950 peak! The median or "middle-average" of the predictions as of now is that about 3,000,000 automatic washers and 1,100,000 conventional washers will be sold. About 1,250,000 dryers will be sold, and some 80,000 ironers will be sold.

Plant expansion continues

Further confidence in the future is evidenced by the announcements of top managements of AHLMA member companies of many millions which they have recently invested or are about to invest in plant expansion. One company has completely rebuilt its home laundry factory enlarging and modernizing it without stopping production. Another has purchased one \$4,000,000 plant and is investing \$2,000,000 more in expanding present facilities. Still another is building a huge new warehouse to aid in leveling production and stabilizing employment. Others are also expanding or improving production facilities.

The production and sale of home laundry appliances are increasing, not only because business is good, but also for other reasons. While our industry was increasing 34% in the past year, the gross national product increased only from 355.8 billion dollars in the first quarter of 1954, to 369.0 billion dollars in the first quarter of 1955, an increase of about 3%. Manufacturing production gained faster than the gross national product. The Federal Reserve Board's "Index of Industrial Production" grew from around 123 in the first three months of 1954 to 135 in March of 1955 — a gain of only about 10% to compare with our industry's 34%. Even the appliance manufacturers'

Median of Industry Forecasts for 1955 (as of early July)

Automatic washers.....	3,000,000
Conventional washers.....	1,100,000
Dryers	1,250,000
Ironers	80,000
Total units.....	5,430,000

index computed by the Research Department of Fairchild Publications was reported in April to be only 22% above the 1954 level.

The home laundry appliance industry has been cutting across the field in its gains for reasons which, I believe, we are all agreed are fundamentally sound. Our products are engineered to a state of perfection never before reached; our market potential is terrific for the new automatic appliances which bring true automation into every home; and our customers seem to have what the economists term "effective demand" — a desire to have, plus the ability to pay!

No bed of roses

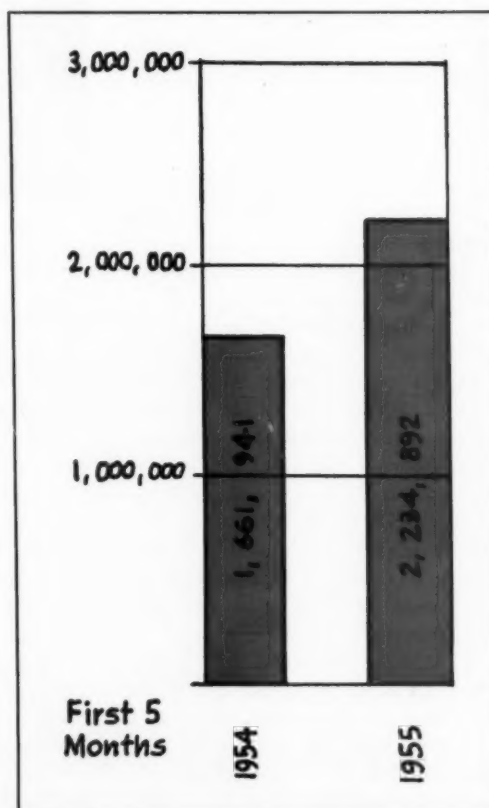
Now, of course, our future isn't all a bed of roses. We have problems and growing pains like any other industry. We must watch carefully lest we be lulled into a false sense of security over our gains from last year. We are going to have a tough time maintaining such wide margins as we get into the fall, because it was about last October when things began to pick up.

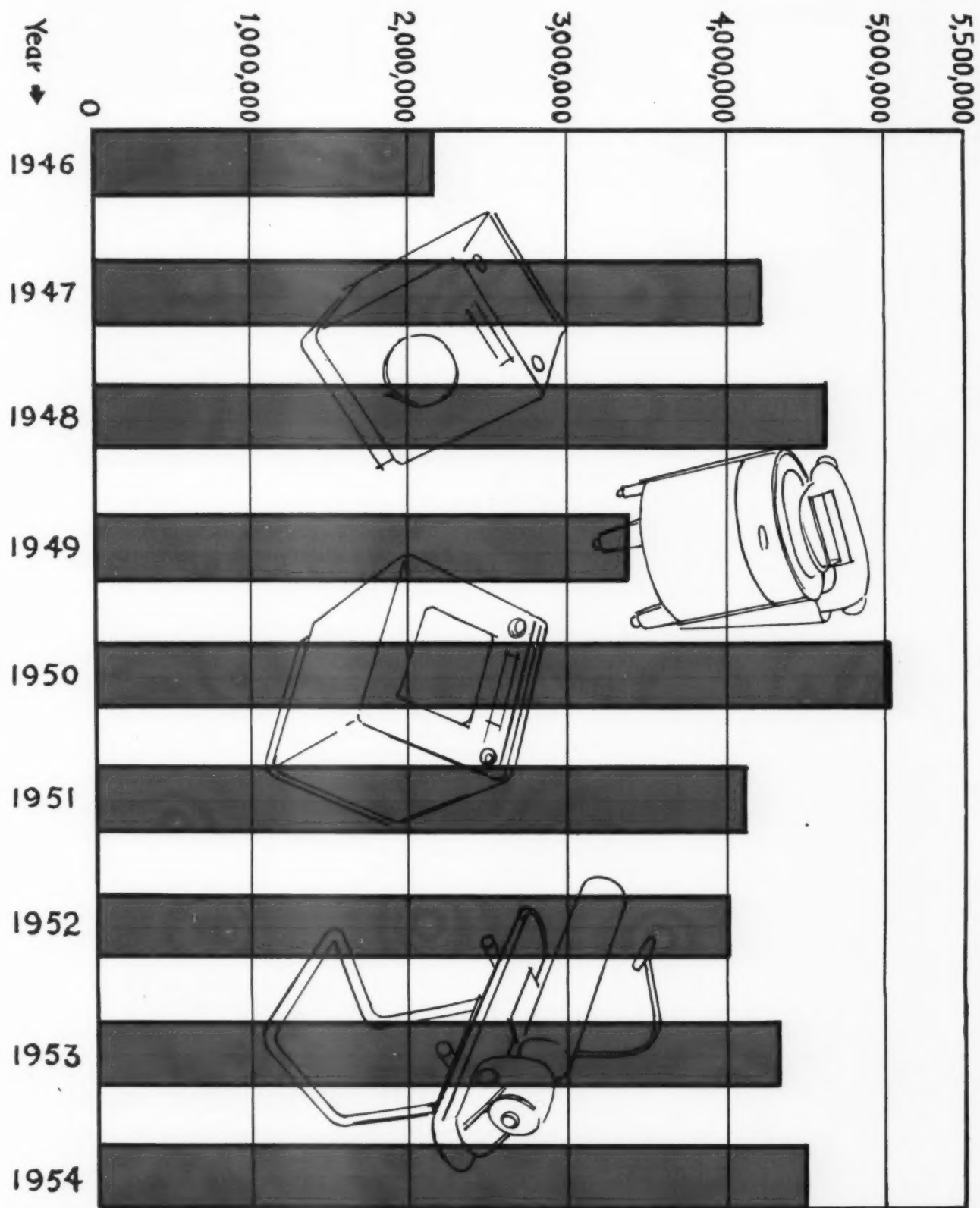
We must watch carefully the effect which rising steel and other costs have on our products. We will be faced with the dilemma of maintaining prices and volume while we are squeezed from the cost side by higher prices which we must pay. These factors will affect each company differently — and each, of course, will have to resolve its own situation.

In working with the association members the AHLMA headquarters staff and the association president have a wonderful opportunity to observe what is on the minds of many different people in the industry.

to Page HL-38 →

COMPARISON
Home Laundry Appliance Factory Unit Sales
First 5 Months of 1954
vs. First 5 Months of 1955.





Tubs

any size, shape or type



The shape of a tub, or its size or its type, has a lot to do with a washer's efficiency. So it's small wonder that so many leading washer manufacturers depend on Ingersoll to produce their tubs in the sizes, shapes and types required.

Ingersoll's extensive experience covers the whole wide field of tub design and production. Ingersoll's engineering skill assures adaptation of design to mass production techniques. Ingersoll specialized equipment can turn out any type tub — from turtle-neck to wrap-around — with the efficiency that means high quality production at economical cost, and deliveries that dovetail with your own assembly schedules.

If you have a tub problem, toss it to Ingersoll. Chances are, we've already got the answer; if not, we know how to get it. No obligation, of course.

Ingersoll



INGERSOLL PRODUCTS DIVISION

Borg-Warner Corporation

1000 WEST 120TH ST., CHICAGO 43, ILL.

Is there a V-BELT in your appliance drive?

If there is we believe it will profit you to consult with Nagel-Chase for these reasons:

First: V-Belt pulleys have been a specialty of this company for over 25 years. They know how to manufacture them right so that they run true and stand up under hard service!

Second: Nagel-Chase pulleys can be manufactured in a variety of sizes from 2-5/16" to 14", O.D. among which you may find just the right pulley for your drive.

Third: When you are designing a new drive, it might pay you to consult with Nagel-Chase, who have 25 years of V-Belt drive experience behind them, and who will be glad to submit samples for testing purposes.

APPLIANCE CASTERS, TOO!



Manufacturers of mobile appliances, too, can consult with Nagel-Chase profitably, for appliance casters are another specialty of this company. Millions of washers, ironers and other appliances (even TV sets) are moving on Nagel-Chase appliance casters today. Samples are gladly furnished to appliance designers.

PRESSED STEEL PARTS

Very frequently, a pressed steel part can be produced at lower cost than a small casting or machined part. Nagel-Chase welcomes inquiries and their engineers may be able to assist your designers in cutting manufacturing costs!



WRITE NAGEL-CHASE TODAY FOR COMPLETE INFORMATION

THE NAGEL-CHASE MANUFACTURING COMPANY
2811 N. Ashland Avenue, Chicago 13, Ill.
SPECIALISTS IN CASTERS AND PULLEYS FOR NEARLY A QUARTER CENTURY!

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Hotpoint

AT LARGE

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Beam

Roy A. Bradt
Maytag

Washers enjoying greatest sales era

by Jack D. Lee. CHAIRMAN, AHLMA WASHER DIVISION COMMITTEE, AND MANAGER OF LAUNDRY EQUIPMENT DEPARTMENT, WESTINGHOUSE ELECTRIC CORPORATION



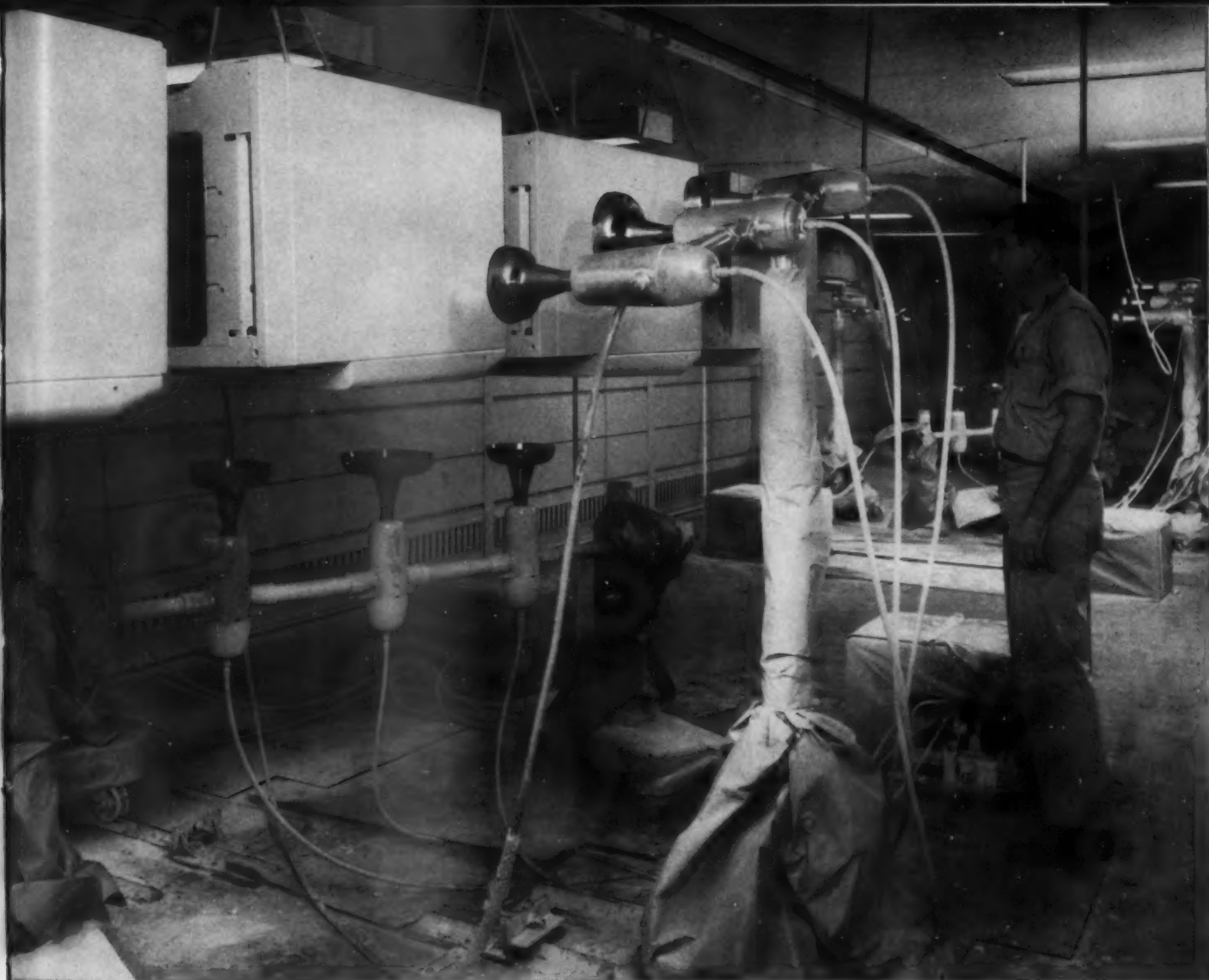
Automatic washers, while already having made their niche in the American heart and home, are continuing to make even greater sales gains than ever before. During the first six months of 1955, automatic and semi-automatic washer factory unit sales totalled 1,512,973 units. This is the greatest six-month sales period for this appliance in the history of the industry. And that is only a start. We expect the present high sales level to continue and go up,

and one of our members has forecast that as many as 3,600,000 automatic washers will be sold annually by 1959.

Another factor, and one that will become increasingly important in the near future, is the washer-dryer combination. Some are already on the market, while a number of manufacturers will be introducing this unit within the next couple of years. It is very definitely a growth factor. Like everything else, however, it is a brand new appliance and a new approach to washing problems. It does more than anything else to make

washing simple and easy for homemakers to do in a minimum amount of space.

Even though washing machines have been produced in America since about 1873, the automatic washer is still a relatively new appliance on the American scene. While automatic washers are enjoying a spectacular sales growth, wringer models are continuing to be an important factor. Because of the tremendous popularity this model has enjoyed over the years, we still see a continuing good market for wringer washer sales.



All-in-One laundry gets One-Two Finish... Fast!

When the Bendix Home Appliances Division of Avco moved to its new plant in Nashville, Glidden Technical Service helped get the new electrostatic spray-finishing line and the primer system going, with fewest headaches. Special Glidden Nubelite finishes were developed to go on smoothly and evenly over the Glidden Nu-Pon flow-coat primer. The need for a second inside-finish coat was eliminated.

This is typical of Glidden Technical Service available to all manufacturers to help them apply Nubelite and Nu-Pon finishes. A letter will bring a Glidden Representative to your plant.



THE GLIDDEN COMPANY

INDUSTRIAL FINISHES DIVISION

11005 MADISON AVENUE

CLEVELAND 2, OHIO

SALES OFFICES AND FACTORIES:

San Francisco, Los Angeles, Chicago (Nubian Division—1855 North Leclair Avenue), Minneapolis, St. Louis, New Orleans, Cleveland, Atlanta, Reading, Canada: Toronto and Montreal

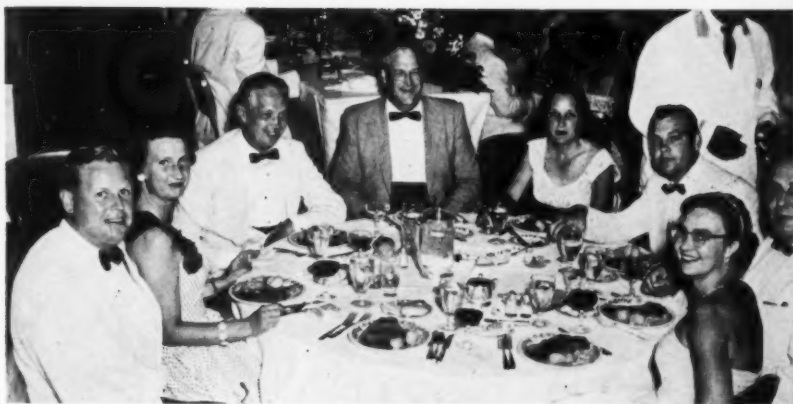


finish attends a





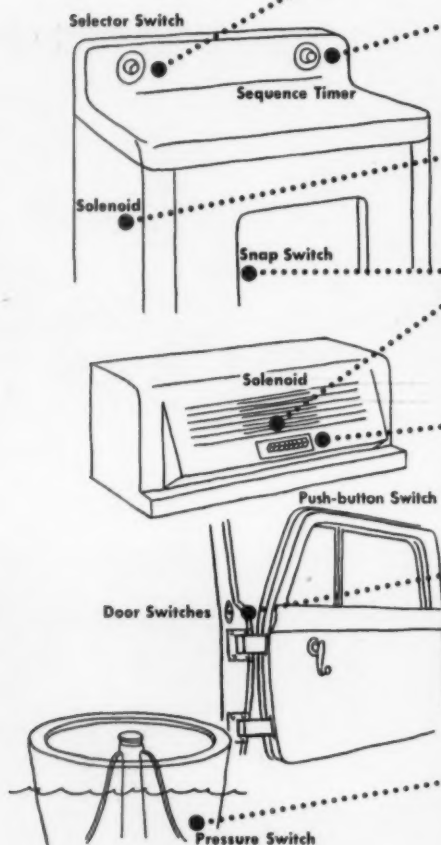
AHLMA banquet



for CONTROL...

of Electro-Mechanical Force
Consult with Soreng First

Some of the Applications
of Soreng-Designed Controls



Soreng controls can be custom designed—to meet
your specific requirements—at mass production prices.

SORENG

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OTHER SORENG PRODUCTS FOR THE APPLIANCE, AUTOMOTIVE AND AIRCRAFT INDUSTRIES

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Selector Switch

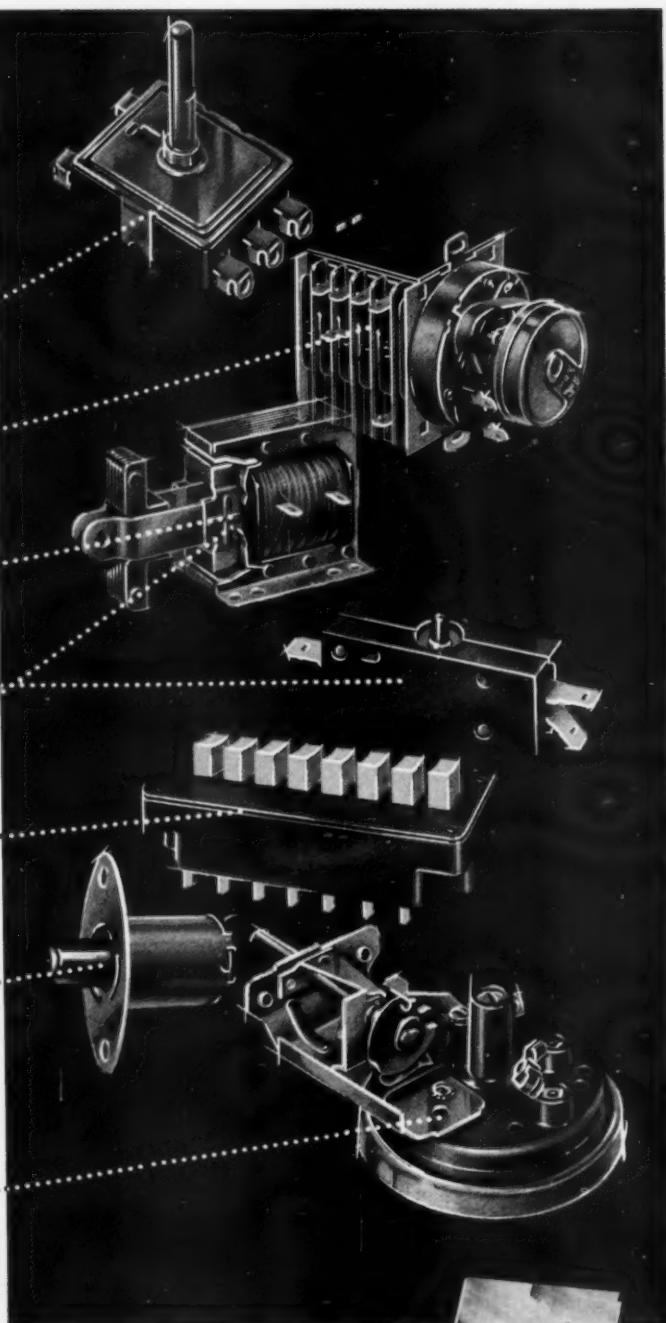
Timer

Snap Switch

Push-button Switch

Door Switch

Solenoid Valve



For complete facts write for your data
folder on Soreng Controls



Dryers rising fast in popularity

by *E. J. Sorensen* • CHAIRMAN, AHLMA DRYER DIVISION COMMITTEE, AND MANAGER OF LAUNDRY EQUIPMENT DEPARTMENT, HOTPOINT COMPANY



According to our own industry factory unit sales figures, we have just completed the best six months sales period in the history of the automatic clothes dryer. It is very evident that dryers are fast gaining in popularity, based upon their sales ratio to automatic washer sales. Some of our members believe that in the not-too-distant future, perhaps three or four years, an automatic dryer will be sold for every automatic

washer, not counting washer replacement sales.

The greatest sales person for any appliance, but particularly for automatic clothes dryers, is a satisfied customer. Our best customers, women, are becoming more and more sold on dryers every day. They talk among themselves on the time and labor saving qualities of this appliance, and as a result have become walking advertisements for our product. As the advertising proverb goes, the word W-O-M-A-N stands for "Word Of Mouth Advertising Now."

At our annual meeting in January, Ray Halvorsen, the 1954 chairman of this committee, predicted that dryer sales for 1955 might reach the magic figure of 1,000,000 units. Following the very successful first half-year, our members were polled in July and estimated that the million forecast could very well be exceeded by as much as 25%. Whatever the actual figure, we are sure that dryer activity this fall will represent the greatest unit sales period in the history of this product.

Educational programs acquainting home builders with ironers

by *Joseph Groshans* • CHAIRMAN, AHLMA IRONER DIVISION COMMITTEE, AND GENERAL SALES MANAGER, IRONER DIVISION, SPEED QUEEN CORPORATION



Today, AHLMA's Ironer Committee is engaged in an extensive publicity and educational program to promote the use, acceptance and sales of the automatic household ironer. The ironer actually saves more time and work than any other laundry appliance, and as such, should take its rightful place in the home . . . every home in America, I might add.

Some proof that our Committee is working to increase ironer sales and

thereby help ironer manufacturers, distributors and dealers, is our recent campaign among 98 builders of the "Idea Home of the Year". Each builder was contacted by Association headquarters and urged to include an automatic ironer in the laundry area. Individual manufacturers followed up this letter with their own appeal to builders, including company literature on the ironer. As a result, everyone of these builders was reminded over and over again of the importance of the automatic ironer in today's modern home.

Other activities carried on by

AHLMA's Ironer Committee are equally important. These include a recent survey made among the home equipment editors of the nation's leading women's magazines to acquaint them with current situations in the ironer industry and to obtain their advice and counsel with regard to future actions. Tie-in promotion with electrical leagues and utilities, and an educational program among school administrators, teachers and others to explain the workings of each manufacturer's school plan for ironers and other home laundry appliances are also under way.

SPRA-CON **automatic paint applicators**

Serve these
important
companies

BENDIX

Hotpoint

Whirlpool

ABC

Westinghouse

Laundry Queen

AUTOMATIC WASHER COMPANY

Write for case history information and the names of
companies using Spra-Con Equipment in your field.



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The **SPRA-CON COMPANY**

3600 ELSTON AVENUE • CHICAGO 18, ILLINOIS

ENGINEERS AND MANUFACTURERS OF WASHERS, OVENS, AUTOMATIC PAINT APPLICATORS,
CONVEYORS, AND EQUIPMENT FOR COMPLETE PAINT FINISHING SYSTEMS

**CASTER SOCKETS
AND BRACKETS
...OUR SPECIALTY...**

Here are a few of the types of caster sockets and brackets manufactured by Danielson. All are produced with extreme economy to exact specifications. Let us figure on your needs.



Our plant is specially geared for this type of work where high production and low cost are a prime factor and yet quality and precision workmanship are always our goal.

Our Press Department is equipped with presses ranging from 5 ton to 300 ton capacity, and specializing in deep draw work for Appliance and other Metal Products Manufacturers. Other services include: Shearing — Circle Shear — Spot Welding — Arc Welding — Silver Soldering — Hydrogen Brazing — Polishing — Degreasing — Painting — Assembly — and our complete Tool and Die Department will furnish precision tooling for your own fabricating department.



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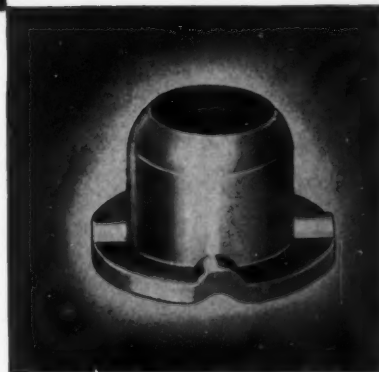
Danielson

your stamping headquarters

for **PRECISION
WASH MACHINE
PARTS**

Danielson stamped **WELD NUTS** for use on automatic washing machines, dryers, refrigerators and other similar products requiring leveling at point of installation.

Danielson **WELD NUTS** made in a multi-sequence stamping process are equal in durability and strength to any machined weld nut but cost less.





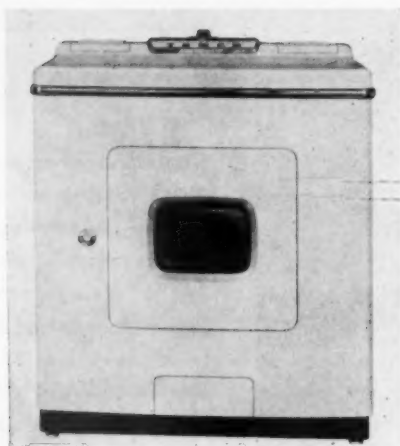
BLACKSTONE CORPORATION

TYPICAL PRODUCTS

"dryer has gained acceptance . . . no longer considered a luxury item"

HAMILTON — "The ratio of dryer sales to automatic washer sales is now more favorable than ever before. One dryer is being sold for every 2½ automatic washers. Only five years ago the ratio was more than 10 automatic washers sold for each dryer. It is reasonable to predict that in the relatively near future, dryers will be selling with automatic washers on a one-for-one basis.

"The 1955 business outlook is good. Sales records indicate that 40% of industry dryer sales today are being made to owners of homes costing less than \$10,000. This would indicate that the dryer has gained acceptance by the average householder, and is no longer considered a luxury item. The dryer industry has many reasons to be confident of the future." — R. G. HALVORSEN, VICE PRESIDENT - SALES.



TEMCO, INC.

HOTPOINT COMPANY



SPEED QUEEN CORPORATION



"even the optimists are surprised"

BLACKSTONE — "With the industry running at a rate to exceed 5 million units in 1955 and with a great deal of excitement surrounding new contributions to the art, it is bound to be of greater stimulation at the consumer level. Under the circumstances, forecasting today is a pleasant task, for even the optimists are surprised.

One line of particular note may be of particular interest and that is the shrinkage of the single-line manufacturer in the home laundry equipment field. There are now but few of us as single-line manufacturers, and it behooves us to continue to offer that which is different if we are to hold our heads above the competitive water line." — JOHN M. WICHT, VICE PRESIDENT.

FACTS OF THE HOME LAUNDRY INDUSTRY

washers - dryers - ironers



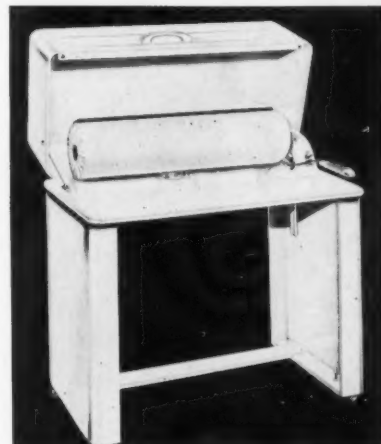
NORGE DIVISION, BORG-WARNER CORP.

"colour introduced in Canada"

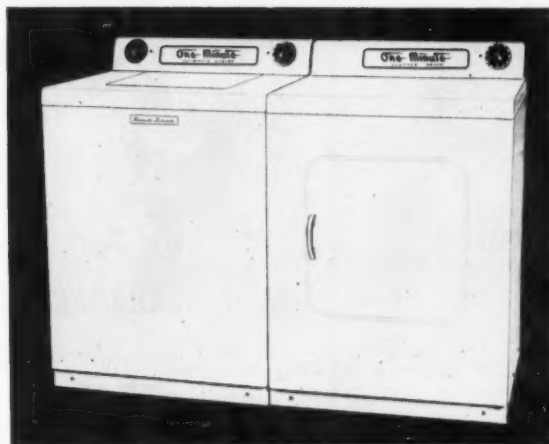
BEATTY BROS. — "All while goods items have been enjoying increased sales and definite strength over the last three months . . . Betty Bros. Limited introduced colour in Canada to the Canadian home laundry industry, with the advent of a new Cromatic line of conventional washers, with colour available to order on automatic washers and dryers. The Cromatic line was first brought to the market in February, and since then there has been a definite upsurge in laundry equipment." — O. L. LOVELL, GENERAL APPLIANCE SALES MANAGER.

"wonderful appliance"

CALORIC—"We anticipate our dryer business to grow as this wonderful appliance gains more and more consumer acceptance . . . Our most recent introduction was an adaptation of our dryer for commercial coin operation." — VICTOR KLEIN, ADVERTISING MANAGER.



ARMSTRONG PRODUCTS CORP.



ONE MINUTE WASHER COMPANY



Bendix — has introduced an automatic washer which uses an energy disc (above) which rests on an incline shaft at bottom of washing cylinder. As the shaft rotates at 590 rpm, the disc undulates constantly and this action, together with that of the three web-connected vanes, sets in motion spiral, conical and undertow water action.



"sales running well ahead of a year ago"

WESTINGHOUSE — "Sales of Westinghouse laundry equipment are presently running well ahead of the figures a year ago at this time. "We feel that sales will continue at this level for the remainder of the year due to a number of reasons including the following:

"Two new members of the Westinghouse laundry equipment line — the Wash-N-Dry Laundromat — a combination automatic washer and dryer in one standard sized unit — and the Laundromat-25 — a fully automatic family sized washer measuring 25 inches wide — have gained very fine reception from our dealer organization and the buying public. We expect these two models to be sales leaders in their fields. We also expect our other models to sell at the same or better rate." — JACK D. LEE, MANAGER, LAUNDRY EQUIPMENT.



THE WHEELS ARE TURNING IN THE— NEW MANUFACTURING FACILITIES

the location of the new
SPERRY RUBBER & PLASTICS COMPANY plant...
Your plant for service

Our ad in the June 1955 issue of *finish* showed the accompanying photograph and announced that we would soon complete a new manufacturing plant. We are now pleased to announce that the first "wheels started turning" in August and in September production will be greatly increased.

We at Sperry Rubber & Plastics know that this new plant is made possible by the cooperation and faith you have extended to us in permitting us to be a part of your production and assembly lines. Without your confidence and continued faith in our abilities as a manufacturer this new building and all it stands for would most certainly not become a reality.

On July 1, 1949, Sperry Rubber & Plastics started production. Now in 1955, just six years later, we will move into the new plant — a plant equipped with the very latest in modern equipment for the efficient production of your extruded rubber, plastic and silicone products.

In response to your continued confidence we at Sperry Rubber & Plastics pledge ourselves to serve you with increasingly better service.



the **SPERRY RUBBER & PLASTICS CO.**

31 WEST 7th STREET • BROOKVILLE, INDIANA

Telephone: BROOKVILLE 427



EXPERIENCE

"Experience" is a hollow intangible a claim that means nothing to anyone . . . unless the claimant passes it along to those who can benefit by it.

As a pioneer in the ceramics industry, Pemco has the experience BUT . . . along with that experience goes a reputation for passing it along . . . as those who have benefited by it will testify.



PEMCO

CORPORATION • BALTIMORE 24, MARYLAND

Manufacturers of "The World's Finest" Porcelain Enamel Frits, Coloring Oxides, Screening Pastes, Glaze Frits, Body and Glaze Stains, Underglaze and Overglaze Colors, Vitrifiable Glass Colors.

MORE INDUSTRY PRODUCTS



BEATTY BROS. LIMITED

"freedom from the drudgery of the clothes-line"

TEMCO — "Since World War II one of the great growth items in the appliance field has been the clothes dryer. Each year has brought a substantial sales increase and this year is no exception. Statistics released by the American Home Laundry Manufacturers' Association show an increase of approximately 70% through May compared with the same period a year ago.

"The accumulative weight of extensive national advertising and publicity coupled with effective promotional campaigns at the retail level have achieved a consumer acceptance for the dryer. The housewife has become not only conscious of the dryer as a labor saving appliance, but also desirous of freeing herself from the drudgery of the clothes-line. There is every reason to believe that this desire will continue to manifest itself in greater sales for the clothes dryer industry." — F. DONALD HART, EXECUTIVE VICE PRESIDENT.

HAMILTON MANUFACTURING CO.



"aggressive advertising and merchandising"

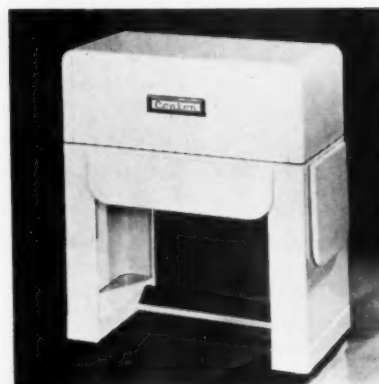
MAYTAG — "Our sales in the first six months of 1955 were over \$50,000,000, which is a new record for Maytag. We are continuing an aggressive advertising and merchandising program. New methods introduced this year have broadened the base of our market and we are continuing to expand our facilities.

"Prospects for the appliance industry appear to be very good, but increasing costs, of both material and labor, require unceasing attention to more efficient and lower cost production methods." — FRED MAYTAG, PRESIDENT.



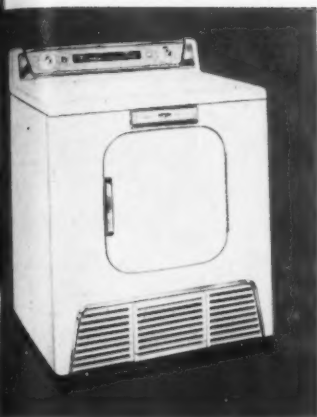
WHIRLPOOL CORPORATION

CONLON-MOORE CORP.



CALORIC APPLIANCE CORP.





FRIGIDAIRE DIVISION, GMC

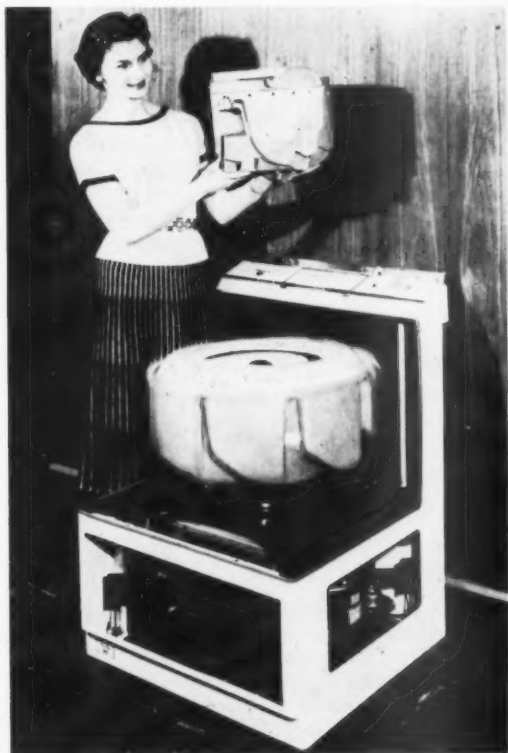
"expect 35% increase in '55"

HOTPOINT — "The home laundry industry can be expected to sell about 2,800,000 automatic washers and 800,000 electric dryers by the end of 1955.

"With the opening of our new home laundry plant, employing techniques never before used in the manufacture of automatic washers and dryers, Hotpoint expects to increase its home laundry business 35% in 1955. We are forecasting about the same increase for 1956." — **JOHN F. McDANIEL, VICE PRESIDENT-MARKETING.**

"a place for the wringer washer"

ONE MINUTE — "Based on experience, I am firmly convinced that the wringer washer has a permanent place in the future of the home laundry equipment industry . . . I can name people who rent and move quite often, people with modest budgets, and people with water supplies of limited nature and lower pressure, who can't take full advantage of an automatic cycle-type washer." — **L. M. GREEN, SALES MANAGER.**



Apex — features a fibre-glass spiral tub agitator on their new automatic washer which gives a stuffing action at the end of the washing cycle, leaving the aerated and stuffed clothing softly piled within the tub. A section of the agitator, held by the model, shows the interior water balancing pockets that automatically correct out-of-balance loads.

finish SEPTEMBER • 1955



WESTINGHOUSE ELECTRIC CORP.

"basic selling techniques of 30 years ago being reinforced by increased advertising and promotion today"

NORGE — "Basic selling techniques, which have not changed in 30 years, are reinforced by increased advertising and promotion today. In 1925 we had to get out and tell people about the product. Now we are backed by millions of dollars worth of advertising that paves the way for the retail sale.

"Look at the strides we've made. In 1925 even we would have been incredulous if told that the industry would sell 15,000,000 major appliances in 1955. In 30 years the major appliances have passed from a novelty to a necessity.

"What will 1985 bring? Saturation? Impossible. The strength of this business is its ability to expand its markets . . .

"There is one most interesting facet of the industry's progress that cannot be overlooked — the revolution that appliances have wrought in the home. Mother now has more free time, she is freed from the wash-tub. She can now enjoy her children, and even has time to develop their homemaking or handicraft skills . . . Above all we have provided mother with more time for her family, for picnics, for walks." — **JUDSON S. SAYRE, PRESIDENT.**

THE MAYTAG COMPANY





We've specialized in stampings for the washing machine industry

THE problem of supplying washing machine tubs has been turned over to us by leading manufacturers time and time again.

We're glad to have the reputation of leadership in the field. And we accept the responsibility. You will find Mullins ready always with the best technical knowledge and equipment. You will find an alert, pro-

gressive attitude—an honest belief that the problems of your business are our problems too.

In planning for the future or for the most economical source for current production, consult with us. Mullins has made many notable contributions to the industry's progress and hopes to make many more.



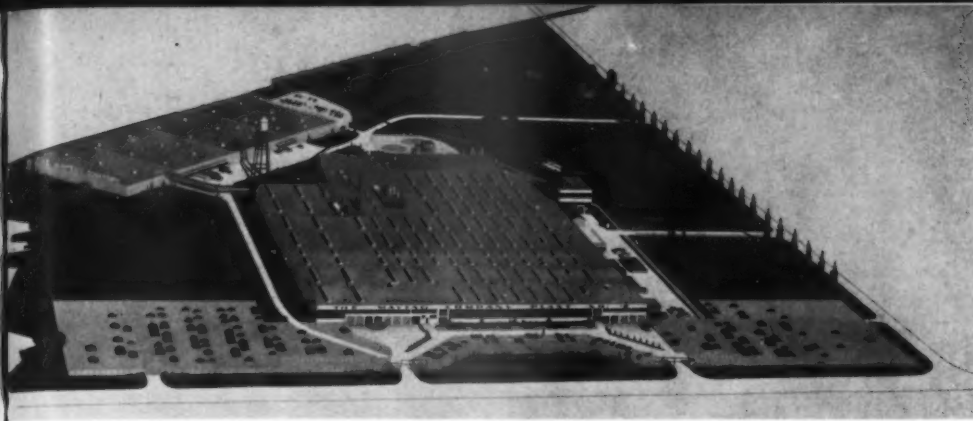
MULLINS MANUFACTURING CORPORATION

SALEM, OHIO

Design Engineering Service, Large Pressed Metal Parts, Porcelain Enameled Products

HL-32

SEPTEMBER • 1955 finish



The Maytag Company—has a new central service warehouse (upper left) Plant 2, in Newton, Iowa, which will accommodate 30,000 finished appliances. Storage and shipment of all repair parts, formerly a Plant 1 function, has been moved to the warehouse. Recent additions to Plant 2 proper include a new plating department and a waste disposal plant. Under construction is a 30,000 sq. ft. porcelain enameling addition.

Examples of plant expansion and modernization

Beam Manufacturing Company

The completion of a plant addition which provides for a 30% increase in floor space has been announced by Beam Manufacturing Company, Webster City, Iowa. The addition will house machining and press equipment.

Whirlpool Corporation

A 250,000 sq. ft. plant in Marion, Ohio, purchased last February by Whirlpool Corporation, is undergoing extensive alterations under the direction of a task force headed by Glenn A. Evans, general manager.

The plant is being converted to the production of automatic clothes dryers, and "a pilot production line is planned for sometime in the fall, with full production scheduled for early 1956," according to Donald W. Alexander, vice president in charge of all Whirlpool operations.

Norge Division, Borg-Warner Corporation

Completion of a \$2,500,000 expansion and retooling program at the Effingham and Herrin, Ill., plants has been announced by Virgil C. Rice, vice president of manufacturing and engineering, Norge Division, Borg-Warner Corporation, Chicago.

It was stated that the expansion will enable Norge to double its production capacity for automatic clothes washers and dryers. Washers are produced at Herrin and dryers at Effingham.

Hotpoint Company

The recent formal opening of Hotpoint's new home laundry factory in Chicago marked the completion of the company's plant expansion program aimed at a 10-year projection of sales to double sales volume. The new plant makes automatic washers and dryers.

John F. McDaniel, vice president of marketing, said the new factory is one of the most modern of its kind, and permits expansion of manufacturing schedules through highly mechanized production facilities.

Turn to Page 22 for the first in a series of articles on production operations in Hotpoint's new plant.

Conlon-Moore Corporation

Regarding the expansion move of Conlon-Moore Corporation to Joliet, Illinois, H. Friedman, general sales manager, reported to *finish*:

"As our Joliet plant has over twice the floor space of our Cicero plant, and as the demand for Conlon home laundry equipment increased, it was decided to combine our operations at Joliet for a much more compact and economical operation. In Joliet, we will continue the manufacture of our seven different models of wringer washers and our automatic electric ironers together with the Moore space heaters. By this move, we hope to be able to furnish promptly the required quantities of washers and ironers to our dealers through whose efforts this demand was created."


The plant was started in 1857, almost 100 years ago, manufacturing under the Moore name and for private brand accounts. Laundry equipment operations were started in 1913, and the Conlon plant was built in Cicero in 1918 for that purpose, stated Friedman.

Temco, Inc.—is constructing a new office building at its Nashville plant to house executive and general offices as well as a permanent display room for Temco gas appliances, including clothes dryers and heating and air conditioning equipment. Additional plant construction is also under way which will bring total plant space to 235,000 sq. ft.



if you need ... LARGE AND MEDIUM-SIZED
SEAMLESS STAMPINGS
 we offer ... SKILL ... MEN ... MACHINES ...
 plus complete finishing and assembly facilities

Send for your free copy of our booklet—"Science and Skill in Sheet Metals." It illustrates many jobs produced for G. P. & F. customers ... and gives interesting information on our abilities and facilities.



G.P. & F.

Do you have a metal product—or a part of a product—that has to be stamped or drawn? Then it's time to take a good look at what G. P. & F. has to offer. We have the manpower, the machines, the facilities. We can handle your *complete* job from start to finish—relieve you of production details and responsibilities—even package and ship your finished product, if you wish. The booklet shown on the left tells the complete story. Write for it today!

Here are just a few samples of our work...



GEUDER, PAESCHKE & FREY CO., 1605 W. St. Paul Avenue, Milwaukee 1, Wisconsin

HL-34

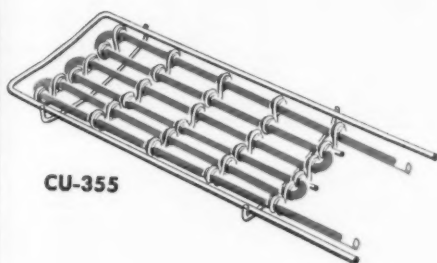
SEPTEMBER • 1955 finish

SPECIALISTS IN HEATING ELEMENTS—

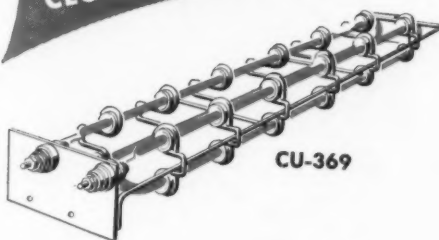
Tuttle's famous NYKELKROM Saddle-Loop and V-Saddle Loop elements lead the field in the dryer industry . . . as they also do in other appliance fields.

EXCLUSIVELY!

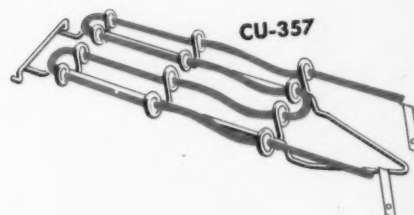
CLOTHES DRYERS



CU-355



CU-369

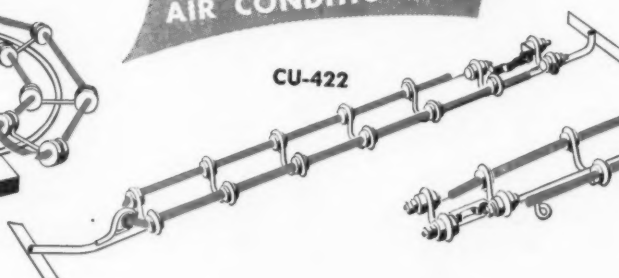


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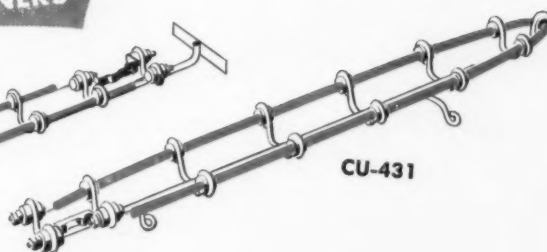
AIR CONDITIONERS



CU-360

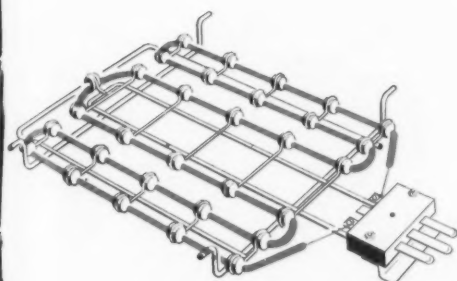


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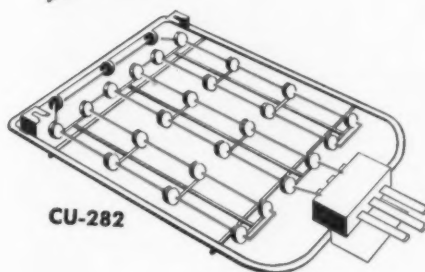


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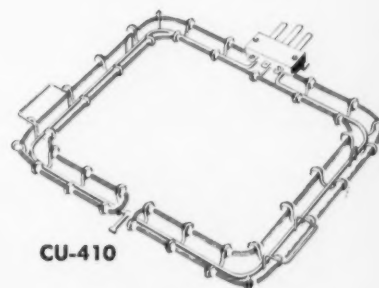
RANGES



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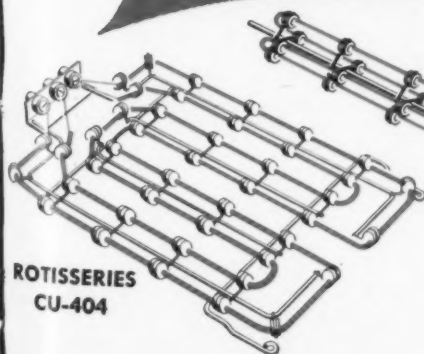


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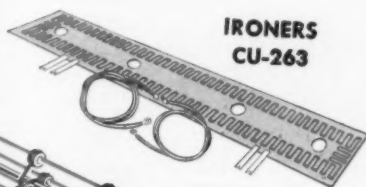


CU-410

MISCELLANEOUS



ROTISSERIES
CU-404



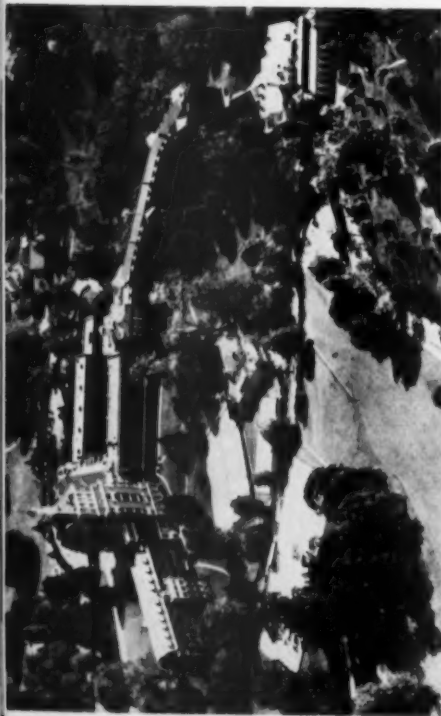
IRONERS
CU-263

RADIATORS
CU-335



H. W. Tuttle & Co.
ADRIAN, MICHIGAN

Manufactured and distributed in Canada by CRONAME (Canada) Ltd., Waterloo, Quebec.



View of portion of first fairway at the Homestead golf course.



Carney, Calgon; Bodley, Permold; Wray, Electrical Merchandising.



At Cascades golf course: Mrs. McCord; Crandall, Lux Clock, Mrs. Crandall; McCord, Ferro; and Mrs. Dana Chase.



Dick Gottlieb, Ironrite.



Mrs. M. K. Tuttle and M. E. Bailey of H. W. Tuttle Co.

A H L M A

A H L M A

Golfing at Hot Springs

SUMMER MEETING OF AMERICAN HOME
LAUNDRY MANUFACTURERS' ASSOCIATION



Lundy, Chicago Market Daily; Cressor, Whirlpool; Hughes, Delco Products; chandising; Grant, Westinghouse, Arm-



Myers, Lovell; Ogden & Stainton, Robertshaw-Fulton; Kelley, Monsanto, ard Electric; Fisher & Jakes, Westing-

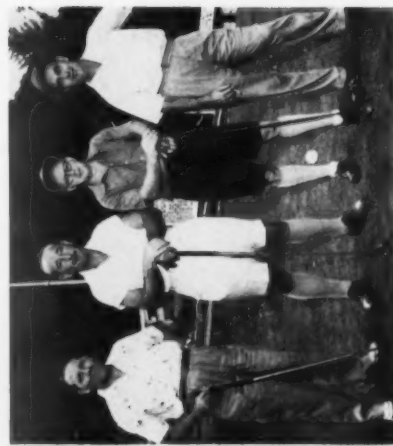


Anderson & Dykstra, New Monarch; Noble, Ferro; Chase, finish. Speed Queen; Brooks & Ray, General Electric



Werner, Wonderly & Yost, Moraine Products. Philco; Caslow, Geauga; Elliott, General Electric

Lundy, Chicago Market Daily; Cressor, Whirlpool; Hughes, Delco Products; Gendall, Lux Glo; Grant, Westinghouse, Armstrong, Electrical Merchandising.

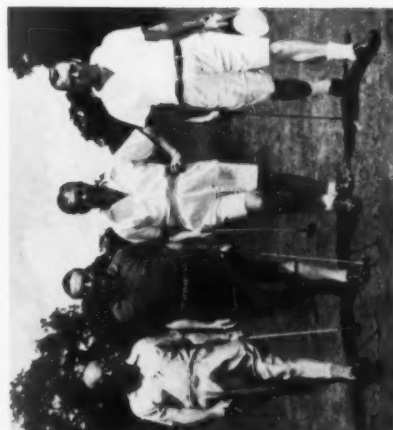


Sells, B. F. Goodrich; Chosid, Congress Drives Div.; Tann Corp.; Pettibone & Miller, Johnson Rubber.

Nixon, Armco; Eastin, Wyckoff Steel; Edgar, General Electric; Farrell, Westinghouse.



Myers, Lovell; Ogden & Stainton, Robertshaw-Fulton; Kelley, Monsanto, and Electric; Fisher & Jakes, Westinghouse.



Buchanan, Apex; Alderman, Mullins; Peterson, Norge; Larson, Monsanto.

Porterfield, Johannsen & Eames, Electrical Dealer; Clancy, Ironrite.

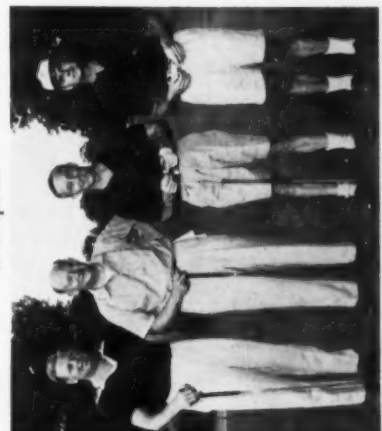


Anderson & Dykstra, New Monarch; Noble, Ferro; Chase, finish, Speed Queen; Brooks & Ray, General Electric.

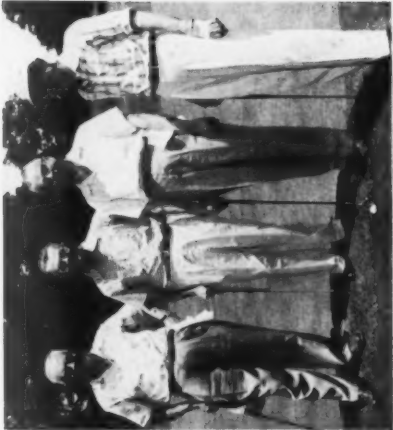


Van Petten, Soreng; Fisher & Jakes, Westinghouse; Glassey, Easy.

Anderson, Nagel-Chase; Kovas, Dole Valve; Buddington, Inland Steel; Upton, Whirlpool.



Werner, Wonderly & Yost, Moraine Products; Philco; Caslow, Geauga; Elliott, General Electric.



Anderson, Ingersoll; Gerhardt & Ardis, Norge; McCord, Ferro.

Hays, AHLMA; Lenna & Wicht, Blackstone; Coyle, Electrical Merchandising.



The future of the home laundry industry

(Continued from Page HL-14)

It is clear, for instance, that we will have to find ways to cope with the multiplicity of problems growing out of individual state and city tax and regulatory laws. My own firm fills our innumerable tax returns each year. The cost of filing them is tremendous — let alone the cost of paying the tax.

The industry is affected adversely by advertising and promotion based on misleading claims — such as picturing an elaborate machine and stating a price for the economy model or deriding features thought by many responsible industry members to be sound. These things cause the customer to lose faith and do precious little to sell products.

We must define terms in language both our customers and ourselves can understand and use. These terms must be as suitable for advertising promotions as they are for industry discussions. They must be helpful to consumers and dealers and distributors and Better Business Bureaus and anyone else who wants to use them. What is most important — we must do this job just as fast as we possibly can!

We must find ways to increase the industry's stature in the nation, increase it commensurate with the growth and strength which we have accomplished. Our voice in legislation must be effective. Our influence in advancing free competitive American-type business enterprise must be constructive and recognized.

We must find ways to promote and advance the sales of those of our products which are lagging and ways to promote and get the most out of the products which are leading.

Some of our members are thinking ahead in the very long pull and trying to work programs of sound economic education for the public schools in the communities in which their plants are located and in which their workers live.

There is the ever present problem of encouraging wiring in homes capable of accommodating the demand of our appliances and that of others — for safety in the home and for most

effective operation of the machines.

Most of these problems can be solved as we go along. It will take time, of course.

Our association's ability to meet its challenge

One comfort which we at this meeting all have in common is that our trade association, the American Home Laundry Manufacturers' Association — AHLMA — is better equipped right now to help us face

NINTH HOME LAUNDRY CONFERENCE

*

PALACE HOTEL
SAN FRANCISCO
NOVEMBER 2-3

the future than ever before. We have thoroughly analyzed AHLMA's needs and provided competent and experienced professional management for the association. The committees through which AHLMA works can more and more count on constant attention to their needs.

Our Traffic Committee has always been a valuable one. Its work involves constant negotiations on behalf of our whole industry with the railroads and other carriers. This is a highly technical field, so technical, in fact, that most of us can hardly understand it. Often we underestimate it for this reason . . . *(a technical consultant for finish is a member of the AHLMA Traffic Committee)*

Our Market Research Committee has for years gathered data, which most of us would not give to anyone else but our association, and disseminated these data. It is, however, a program which is in constant need of attention to keep it abreast of changing conditions. We are doing that. Right now, for instance, this committee is working out a plan for analyzing sales by counties to help our marketing strategy. We will all compete more effectively, not only

against each other, but also all of us against . . . other demands upon the consumers' dollar.

One Industrial Relations Committee is new, but it is already embarked upon a data exchange program, which some of our members have written has been invaluable in labor negotiations even since the first of the year. . .

Our National Home Laundry Conference is unique and famous for its effectiveness as a public relations tool for creating an understanding of our products where it counts — with the teachers of our prospective housewife customers and with the editors of our present housewife customers' magazines. No manufacturer alone could ever gain the acceptance which this conference has created for our whole industry.

On the technical front our Engineering and Research Committee is drawing the best engineering talent of the industry to re-write the wash test procedure, to work with underwriters laboratories and otherwise to protect our interests and advance our frontiers. . .

Also our Home Economists Committee, our Parts and Service Committee, our Government Committee and our Sales and Advertising Committee and all the others are each working in their own way to advance the interests of the industry in practical, hard-headed ways.

In addition to these, the Dryer and Ironer Division Committees are developing new promotional programs. Also a Public Relations and Publicity Committee has just been organized.

All of these committees require organization and leadership. They require management services, budgetary control and record keeping. They must have an understanding continuity in the person of a committee executive secretary. Some of them require legal or engineering consultation. This makes the association's operation a management challenge of no mean magnitude. Many of us work at it. Today I am confident that our organizational structure is so flexible that it can well meet the problems which I have mentioned and the others which may arise.

ALKALI gray ground coat

FOR THE HOME LAUNDRY INDUSTRY

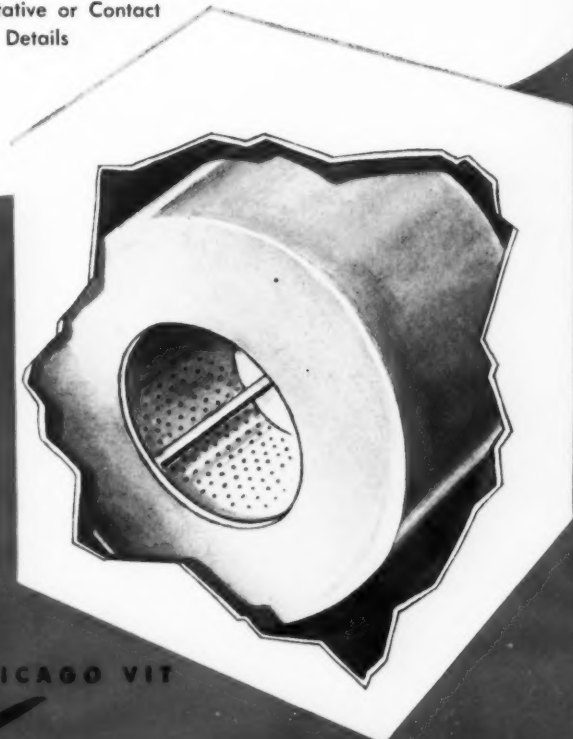
is here...NOW!

Alkali gray ground coat is another typical example of the pace-setting developments that spring from Chicago Vit research. With the advent of detergents for home laundry use a few years ago certain new requirements and problems in coatings arose. These were met and solved by Chicago Vit. Then along came a need for a gray ground coat with high alkali resistance. Chicago Vit research solved this problem too, and today alkali ground coat is not just a promise for the future but a reality that's here . . . NOW! The point is that whatever your end use problem may be you can bring it to Chicago Vit with confidence, knowing you'll get the right answer quickly.

IF YOU NEED ALKALI RESISTANCE WE'VE GOT THE FRITS YOU NEED!

● GROUND COATS ● COVER COATS

See Your Chicago Vit Representative or Contact
Plant Direct For More Details



FOR FINEST FRIT • CHICAGO VIT

Chicago Vitreous CORPORATION

1425 South 55th Court • Cicero 50, Illinois

THESE QUALITY PRODUCTS USE **LUX** TIMERS



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Speed Queen Corp.
Altorfer Bros.
General Steel Wares Ltd.
Crosley
Brantford Washing Machine
Chicago Electric Co.
Coffield Washer Co.
Philco Corp.
Easy Washing Machine Corp.
Norge
Blackstone Corp.
Canadian General Electric
Canadian Westinghouse
Fairgrieve & Son Ltd.
Conlon Moore
Beatty Bros. Ltd.
One Minute Washer Co.
W. M. Cissell Mfg. Co.



DRYERS

Caloric Appliance Corp.
Speed Queen Corp.
Altorfer Bros.
Philco Corp.
Apex Electric Corp.
Easy Washing Machine Corp.
Guelph Stove Products
Maxwell Ltd.
Norge
Rheem Mfg. Co.
Blackstone Corp.
Stiglitz Inc.
Lovell Mfg. Co.
Temco Inc.
Franklin Mfg. Co.
Fowler



LUX MINUTE MINDER MOVEMENT

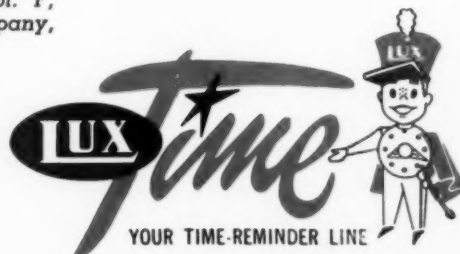
- Standard 2 screw mounting accurately positions zero point.
- Lantern type pinion gear minimizes friction . . . is self-cleaning.
- Long lasting, proven lever escapement principle of operation utilizing balance wheel, hair-spring and lever.
- Available with or without melodious bell chime.
- 15 minute to 4 hour interval.

★ Solid mechanical reliability (rejections less than one-half of 1% over a period of many years).

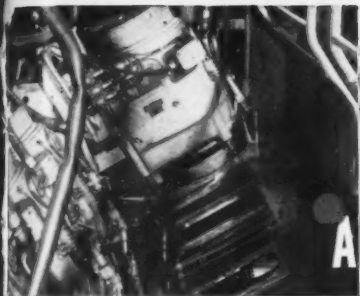
★ Silver contacts and beryllium copper contact springs assure long wear, accurate operation.

These washer and dryer manufacturers . . . big names in the industry . . . know that a quality appliance requires a quality timer. They rely on sturdy, field-proven LUX Timers to assure proper performance of their products.

For information on how LUX Timers can protect your product's good name, write today to Dept. F, Lux Clock Mfg. Company, Waterbury, Conn.



THE LUX CLOCK MANUFACTURING COMPANY • WATERBURY 20, CONNECTICUT



AMAZING "AUTOMATED" DRILL-GRINDER TEAM DOES THE JOB 22 TIMES FASTER

Machining mounting surfaces on the underside of huge tank hulls required ten separate horizontal boring mill setups. Handling, positioning and working on the heavy, unwieldy hulls created a serious bottleneck in production.

Relying on Wean Equipment's reputation as a leading designer and builder of special machinery for industry this concern gave Wean the green light. Wean Equipment engineers set to work and came up with the first completely automatic adaption of a bank of grinding heads to work on an angular surface.

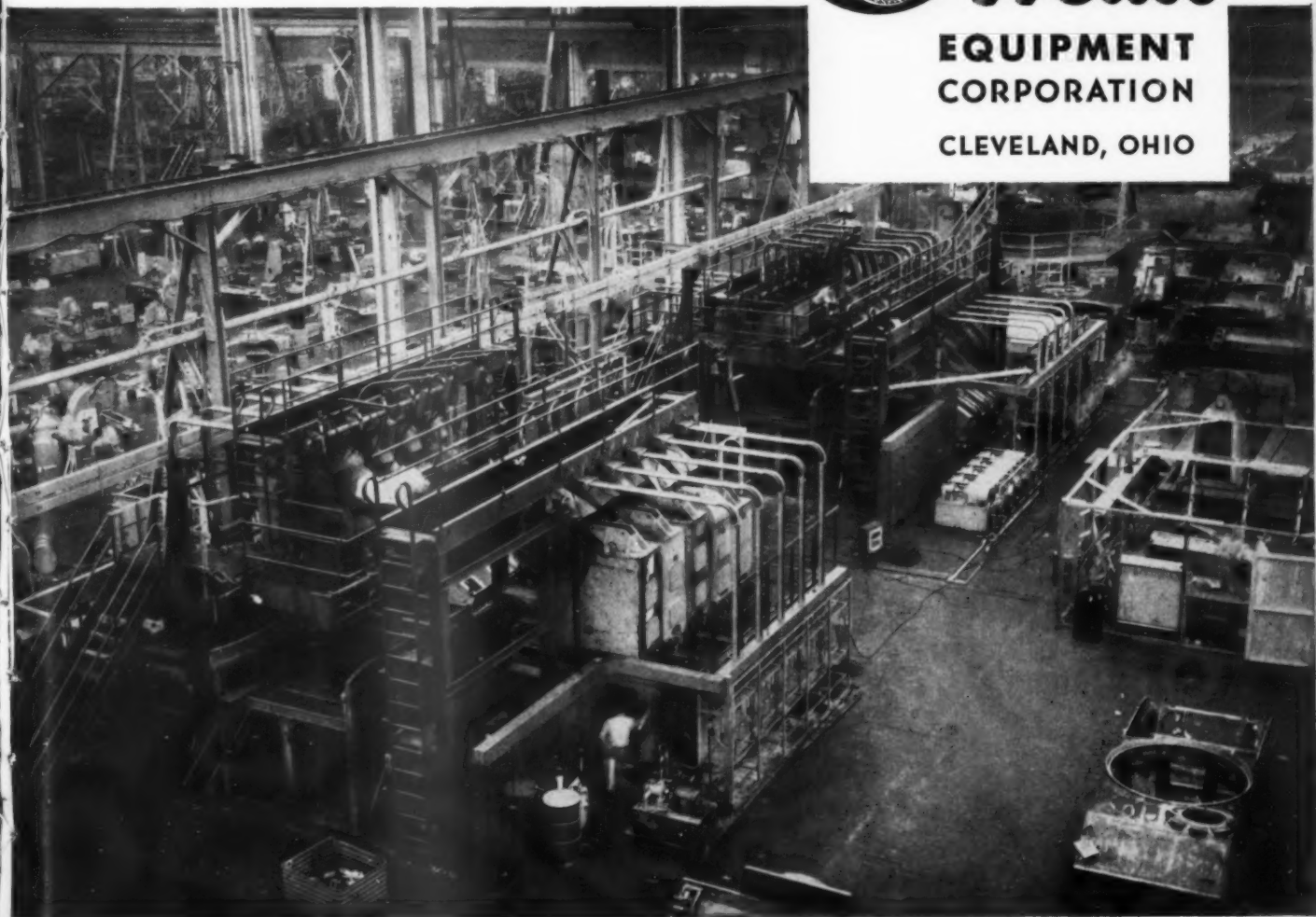
The machine grinds all surfaces simultaneously with unmatched precision, and completes its job

22 times faster than the old method. According to company officials the machine paid for itself in short order by increasing production, eliminating reworking created by human error, and releasing boring mills to other production work. Result: A second machine to perform a difficult drilling operation on the same hull was ordered from Wean. These are typical examples of Wean Equipment's ability to develop and build practical automation equipment.

If you have a production problem — why not call on Wean Equipment and get results.



WEAN
EQUIPMENT
CORPORATION
CLEVELAND, OHIO

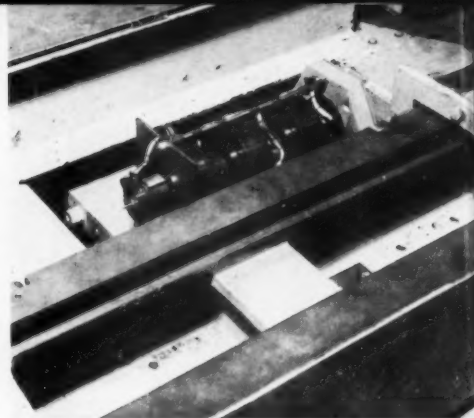




Business machine cards are punched with standard equipment. The cards, punched in decimal form, are not coded and can be read directly.



Operator places standard cards in the "reader" in proper order. Any required manual operations can be indicated to the operator.



Shown is selsyn pickup unit in the control stallation of 80-ton turret-type punch press. pickup unit is used for automatic measurement of the table position.

Automatic control of metalworking equipment

a numerical positioning control developed by General Electric
uses business machine cards to direct machine tool operations

AN automatic control which uses punched business machine cards to control metalworking tools has been announced by the General Electric Company's specialty control department, Waynesboro, Virginia.

Called "numerical positioning control", the new system is adaptable for use on a wide variety of machine tools including punch presses, lathes

and shears, milling, boring and drilling machines.

According to Dr. L. T. Rader, general manager of the specialty control department, the new control can double or triple the productivity of many machines on which it is installed, depending on the application involved.

The control reads positioning di-

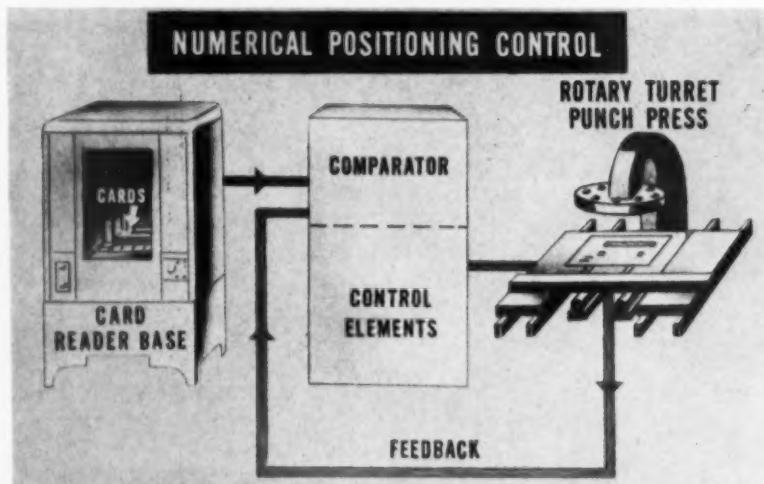
rections from punched holes in standard business machine cards. The directions are converted into positioning signals which direct the machine to the correct work position. This is done through a system of command and pick-up selsyns.

As the first card is read, the machine positions itself correctly. As soon as this position is reached, the next card is read and the machine is ready to move to the next position.

At the same time the command selsyns are positioned, machine directions are also being read from the card. These machine directions are electrically stored and then conveyed to the machine to initiate action in coordination with the positioning movements.

Normally the metalworking operation would take place immediately after the machine reaches the correct position—while the next card is being read. However, in some applications—such as a lathe—machining occurs during the positioning motion. If desired, machine action may also take place before the positioning occurs.

This block diagram shows the system elements in the numerical positioning control system for automatic programming of machine cycles.



After work is loaded, control operator starts the machine, in this case a turret-type punch press, which positions itself and carries out the operations according to card directions.



Completely automatic, the control reduces material spoilage, since human error is eliminated and dimensions are consistently held within required tolerances. All positioning normally occurs simultaneously, thus decreasing positioning time. When

required, positioning can occur in a pre-selected sequence.

The control is designed to give the user increased machine productivity, higher machine speed and greater accuracy.

It was explained that such time-

consuming jobs as positioning templates and tools, laying out hole locations and hand checking are completely eliminated with "numerical positioning control".

It was also pointed out that the
to Page 110 →

Positioning directions are read from punches in standard business machine cards similar to the sample shown.

Printed in U.S.A. - REMINGTON RAND

DRAWING NUMBER	PART NO.	IN-OUT (X-AXIS)	CROSS (Y-AXIS)	TURRET POSITION	SEQ. CHECK	OPERATOR'S INSTRUCTIONS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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The Indian sang his death song



100 YEARS AGO, during a frontier skirmish, an Indian brave, singing his own death song, charged down on a young officer.

Lieutenant George Crook, 4th Infantry, coolly fell to one knee, carefully aimed, and dropped the brave in his tracks.

It was not Crook's first Indian, nor his last. (His right leg already contained a flint arrow-head he was to carry to his grave.) And by the time he made general, Crook was the greatest Indian-fighter this country has ever had.

Yet, he was also one of the best friends the Indians have ever had. For he understood them well, dealt fairly and firmly, and always kept his promises.

When Crook died, Indians wept. And a Sioux chief named Red Cloud said: "He never lied to us. His words gave the people hope."

No nation can ever have enough men like George Crook. But America had, and still has, a lot of them. That's important to remember. Because it is a wealth of human character rather than a wealth of money that gives America its real worth. Just as it is the Americans, all 160 million of them, standing behind our country's Savings Bonds, who make these Bonds one of the world's finest investments.

For your sake—and America's—why not take advantage of this fact? Invest in, and hold, United States Savings Bonds.



★ ★ ★

It's actually easy to save money—when you buy United States Series E Savings Bonds through the automatic Payroll Savings Plan where you work! You just sign an application at your pay office; after that your saving is done for you. And the Bonds you receive will pay you interest at the rate of 3% per year, compounded semiannually, for as long as 19 years and 8 months if you wish! Sign up today! Or, if you're self-employed, invest in Bonds regularly where you bank.

Safe as America – U.S. Savings Bonds

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Hommel frit helps achieve lifetime beauty, work-saving advantages and a color surface that cannot stain, mar or show wear . . . remember it's the FINISH that sells the housewife.



Sales representatives throughout the world

"The
World's
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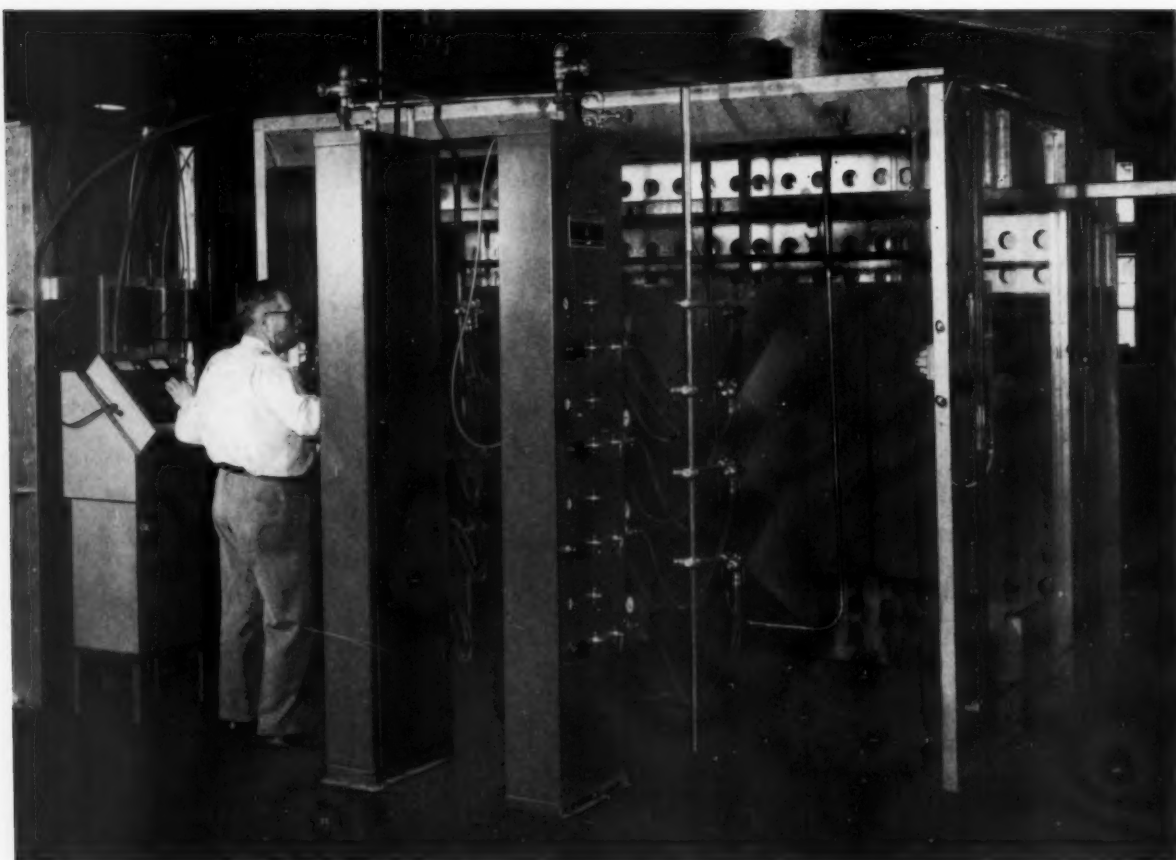
THE **O. HOMMEL CO.** PITTSBURGH 30, PA.

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Our Technical Staff and Samples are available to you without obligation. Let us help with your problems.

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Ashdee Electrostatic Finishing System Applies Porcenell at Benjamin Electric

Ashdee's experienced engineers and modern laboratory facilities aided in developing the electrostatic application of Porcenell bringing many cost savings to this finishing process.

Whether your metal parts finishing operations involve Porcenell or conventional finishes, you will find an Ashdee system offers you these advantages:

- Completely automatic operation
- Greater material savings
- Higher quality finish
- Faster production speeds
- Reduction in booth clean up time

And with Ashdee you get more long range savings because you *purchase* the equipment. There are no rental charges.

Start now to reduce your finishing costs. Write for the new Ashdee case history file that gives you positive evidence that Ashdee's Electrostatic Finishing System is a wise investment.

ASHDEE ENGINEERING SERVICE

Ashdee's staff of trained engineers is available to you for consultation. At no obligation, samples of your products will be sprayed electrostatically in Ashdee's laboratory. The savings will surprise you.

—Write today. You'll be glad you did.—

Ashdee ELECTROSTATIC
FINISHING SYSTEMS

ASHDEE ELECTROSTATIC PRODUCTS, INC.

DIXIE HIGHWAY, HOMEWOOD, ILL. TEL.: HOMEWOOD 1814; (CHICAGO) Waterfall 8-1561

Low temperature ceramic coating for light gauge metal

(Continued from Page 39)

with a saving of approximately one half in steel cost. In the light of this company's initial consideration of improving quality rather than cutting cost, attention must be drawn to their success in developing a chalk sheet whose steel naturally holds a straighter shape, is more easily bonded flat and maintains a highly uniform surface of fine, smooth matteness.

Effective adhesives used

for assembly

After careful inspection, and we might say inspection for chalk sheets is very critical, the coated sheets are transported to the assembly and packaging room for lamination with one of two types of fibre board backing currently in use.

The back up board is cut to size using a panel saw for cutting the

length and a rip saw for cutting the width. Both pieces of equipment are exhausted to prevent any of the residue from getting into the finishing section of the plant.

The first operation for laminating is to spray both the backing sheet and the reverse side of the metal chalk sheet with a special adhesive; just a few minutes air drying time is required to remove volatiles, and the chalk sheet is then placed in a rack holding the back up board so that they will fit edge to edge. The backed up sheet then goes through rubber covered rollers at a pressure of 75 pounds per square inch, and the laminated sheets are then stacked for 24 hours for aged bonding.

When specified, an additional sheet of coated steel is laminated to the back of this assembly.

After aged bonding, the laminated

chalk boards are packed on two boards to a crate with the chalk surfaces facing (kraft paper is used as a separator).

Slotted crating lumber is used for the outside edges. Steel strapping completes the package with four straps encircling the width of the crate on a 120 inch long board (three are used on a 96 inch and two on a 72 inch board). Two straps are then used to encircle the length of the board, and the crate is complete. In other words, all that is used for the complete container is the slotted crating lumber for the edges and the horizontal and longitudinal steel strapping. The size of the board is clearly stenciled on the edge of the crating lumber so that shipments can be made from warehouse stock to distributors in mixed sizes without difficulty.

Diagram on next page includes details of furnace set-up. →

View of Benjamin Electric's lighting laboratory which was the subject of a feature article in August, 1946, finish, entitled "We Built a Laboratory to Meet Our Future Needs."





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 STUD CLIPS
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- ★ for identification ★ for trade marks
 ★ for operating instructions . . .

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designed, engineered & made by
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• We make decal nameplates to meet the exacting requirements of every commercial surface and finish. This means we make many different types . . . some highly resistant to wear, some resistant to heat, others to meet still different requirements. The important fact is that the Meyercord Nameplate Decals you use are specially engineered to your specific needs. This all adds up to easier, faster application and longer, trouble-free service. Let us give you all the facts about Meyercord service and engineered-quality.

Ask For Your Copy of Meyercord "MARK-IT" Manual

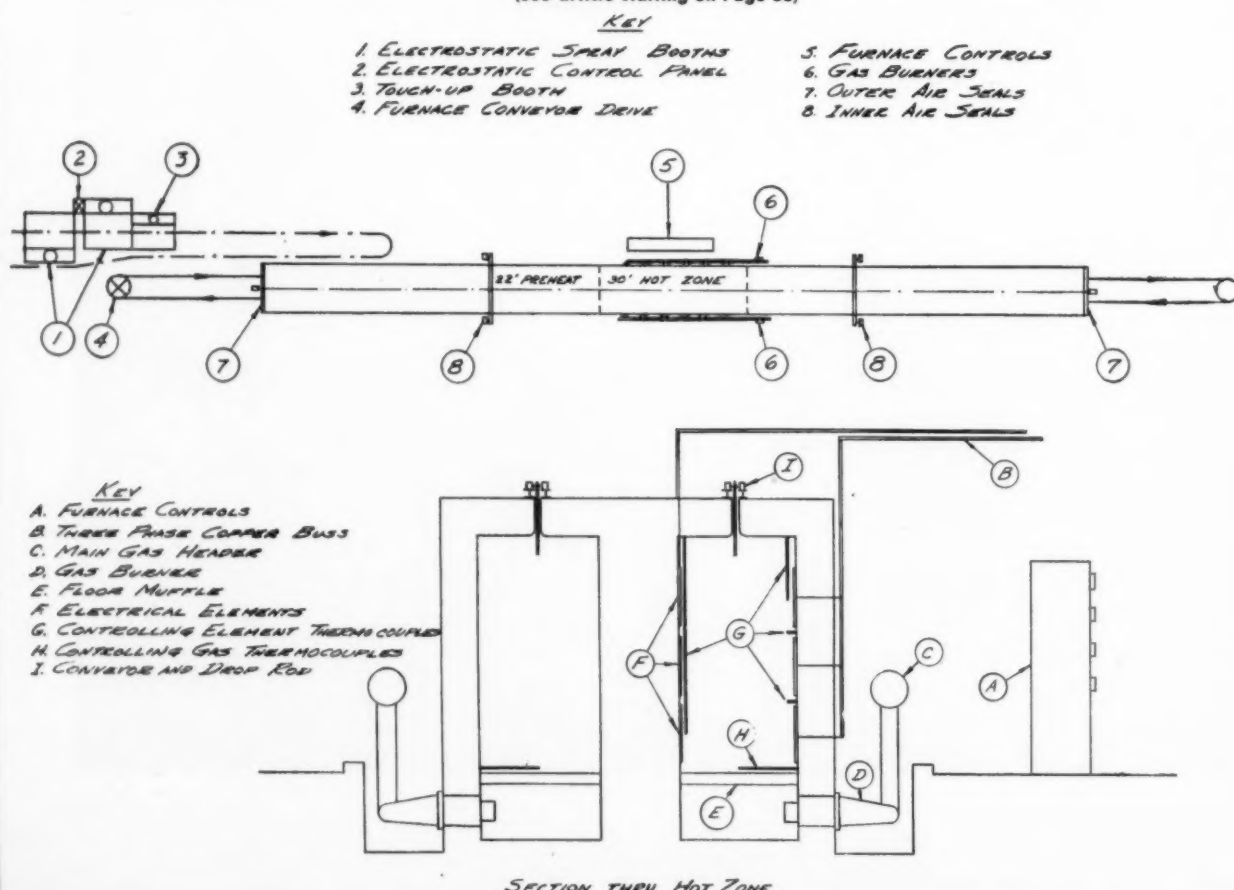
This valuable manual is yours free . . . request it on your letterhead, please. In full color, it contains important information for adopting Meyercord Decal Nameplates to reduce costs and improve product identification.

THE MEYERCORD CO.
World's Largest Decalomania Manufacturers

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 5323 WEST LAKE ST.
 CHICAGO 44, ILLINOIS

Layout of Ceramic Finishing Department at Benjamin Electric Mfg. Co.

(See article starting on Page 36)



finish SUGGESTION BOX

Plastic metal for forming dies, drill fixtures and jigs

A NEW putty-like material, consisting of fine steel powders and a special plastic, can be used to make permanent and durable forming dies, drill jigs, fixtures and similar products.

There are many additional uses, including plug gauges, rubber molds, duplicating machine masters, models, prototypes, and for caulking large holes in metal castings.

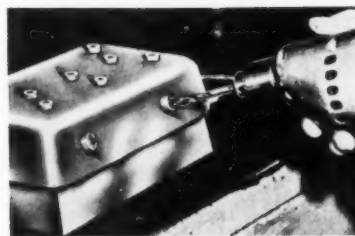
The plastic metal is as easy to use as modeling clay. No heat or pressure is required. After the desired shape has been formed, the new material becomes a strong, tough and rigid "metallic" piece in about two hours. It makes a precision form of the original without distortion or

shrinkage. It can be sawed, drilled, tapped, threaded, and ground with conventional metalworking equipment.

It is stated that a large mass of the plastic metal can be applied to a vertical surface without running or sagging. It has excellent adherence to steel and has high impact, tensile and compressive strength. If additional hardness is required, the material can be chrome, nickel or copper plated or metallized by conventional methods.

Where an error of location has been made in drilling, or an excess amount of steel removed from a machined surface, the new material can be simply spread on the surface, allowed to harden, and then ma-

Left below: Holes in this casting, which were made through an error of location in drilling, are simply filled with the new plastic metal. Right below: This forming die was molded in a short time with the new material which has high tensile, impact and compressive strength.



This photo shows versatility with which the plastic metal can be formed to nearly every shape and contour for holding a piece to be drilled, milled, ground, etc.

chined the same as the original metal. While soft, it can be formed into any shape, and then machined or finished if desired.

Source for more information on this plastic metal may be obtained by writing to finish.

These photos show three simple steps in making a precision metal form of the original.



New Industry Developments

TORQUE-CONTROLLED SCREWDRIVER FOR ASSEMBLY LINE USE

THE development of a new torque-controlled screwdriver was recently announced by Chicago Pneumatic Tool Company.

Called the Magnamatic screwdriver, the new tool is said to permit the desired torque to be applied consistently over high production runs without reliance on operator skill, with increased tool life, and at high production rates.

"The significance of this product," declares Guy J. Coffey, president of Chicago Pneumatic, "extends beyond the production line to the designers' drawing boards, since it is now possible to design more efficiently with smaller, lighter, and less expensive fasteners — and produce the same or a better quality product."

A new concept in torque control, the Magnamatic offers the following features, as listed by Robert T. Beers, manager of the firm's pneumatic tool division:

1. Desired tightness or torque is automatically achieved without reliance upon operator skill.

2. The life of clutch components is greatly increased, due to the absence of any hammering action. (Fifteen months on high production assembly lines driving thousands of screws daily without showing appreciable clutch wear, no parts replacement other than inexpensive retaining rings.)

3. Screw bits last as much as 20 times longer — due to the absence of impacting.

4. Damage to screw heads and surface finishes of products is diminished.

5. Objectionable noise of impacting clutch is eliminated.

Because of the uncertainty of obtaining proper tightness, the tendency is to resort to the practice of using screws that are larger than necessary. For example, Beers pointed out, many products use a $\frac{1}{4}$ " screw operating at 20% of its full tightness, when actually a $\frac{1}{8}$ " screw tightened to 80% of its breaking point will do the job with added weight and cost benefits.

Magnamatic tool drives screw to optimum tightness and avoids distortion in the plastic case of a tape recorder.



In applying a cover to jackscrew gearboxes with torque-controlled screwdriver, the operator keeps an even production rate.

Screws for filters are driven with screwdriver which breaks clean at desired tightness.



Here the tool is used to drive screws to the desired torque in a rheostat.



is your paint department a problem child?



- ★ Are you getting consistent finishing room quality control?
- ★ Are you satisfied with the appearance of your finished product?
- ★ Are rejects throwing your costs out of line?
- ★ Are time and material costs eating up your profits?



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From TV sets to kitchen cabinets, from water heaters to new automobiles, Spee-Flo engineers from coast to coast have an enviable record of assisting manufacturers with their "problem child"—the paint department.

Paint department headaches will disappear with Spee-Flo Hot Spray Heaters. Production costs will drop and consistent, all-weather quality control will be established.

We'll be glad to show you facts and figures on how other manufacturers in your field are producing better products at lower cost. Spee-Flo Hot Spray Heaters pay for themselves in the first few weeks of operation . . . they are long lived and trouble free.

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Builders of practical industrial and automotive hot spray equipment.
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Application is conveyorized _____ turntable _____ mobile _____ other _____
Average volume of material per gun per hour _____
Type of material _____ Please have representative call _____
Name _____
Company _____
Address _____
City _____ State _____

*A. O. Smith has played
an important part in the
progress of water heaters*



...and so has Du Pont DULUX[®] enamel!



America's leading home-appliance finish

... now in service on over 53 million major appliances!

98

There's a great difference between early water heaters and the streamlined appliances on sale today! When A. O. Smith introduced its first glass-lined water heater, it was welcomed for its remarkable rust resistance, good looks and over-all contribution to modern living. And their current Permaglas model, with exclusive Heet-wall and exclusive-formula glass lining, gives the modern housewife far more convenience than ever before. The demand for this new A. O. Smith water heater proves once again that continued product improvement is vital in maintaining the acceptance of the buying public.

And so it is with America's leading home-appliance finish—Du Pont DULUX Enamel! Constant research over the years by Du Pont chemists has resulted in more rugged resistance to chipping, cracking, scratching or staining... easier washability... longer-lasting whiteness than ever before. That's why the DULUX of today meets the most exacting requirements of today's topflight appliance manufacturers. E. I. du Pont de Nemours & Co. (Inc.), Finishes Division, Wilmington 98, Delaware.



"DULUX" ENAMEL

BETTER THINGS FOR BETTER LIVING... THROUGH CHEMISTRY

SEPTEMBER • 1955 finish

NEWS

NORGE SEPARATES HOME LAUNDRY & RANGE DIVS.

Establishment of separate and individual Home Laundry and Range Divisions to meet expanding sales requirements was announced recently by R. C. Connell, vice president of sales, Norge Sales Corp., Chicago.

V. F. Peterson, automatic washer product manager, was appointed manager of the Home Laundry Div. Home Laundry product managers are Hal L. Biddle, clothes dryers; Roy T. Musselwhite, water heaters; and Dan R. Nighswander, conventional washers.

J. J. Edwards, gas range sales manager, heads the Range Div. Jack A. Plano is product manager of electric free-standing and built-in ranges.

MCMILLAN NAMES WILDER

W. W. McMillan & Co., Jacksonville, Fla., manufacturer of heat pump air conditioning units, has announced the appointment of Frank B. Wilder as chief engineer.

STRATHEARN & EMANUEL TO CROSLY — BENDIX POSTS

Chester G. Gifford, president, Crosley and Bendix Home Appliances Divisions, Cincinnati, has announced the appointment of Donald M. Strathearn, formerly director of laundry engineering, as director of engineering for all the company's products. Albert Emanuel II, laundry product manager, has been named general

product manager. Both men have been appointed to the policy-making executive committee.

HINCHLIFF RETIRES AS AMANA SALES MANAGER; RISHEL IS SUCCESSOR

E. L. Hinchliff, general sales manager of Amana Refrigeration, Inc.,



J. A. RISHEL, JR.

Amana, Iowa, for 11 years, has retired and become a special merchandising consultant, it was announced by George C. Foerstner, executive vice president.

Succeeding Hinchliff will be J. A. Rishel, Jr., formerly a special representative. Prior to joining Amana he was general sales manager of Deepfreeze Appliance Div., Motor Products Corp., Chicago, and for five years, appliance div. sales manager, Youngstown Kitchens, Warren, Ohio.

TRUEBLOOD IS MAGIC CHEF

S. W. DIVISION SALES MGR.

Wilbur T. Trueblood, merchandising manager of the Gas Range Div., Magic Chef, Inc., St. Louis, Mo., has been promoted to division sales manager of the newly created southwestern sales division based in Dallas, Texas. The appointment was announced by Kenneth O. Dupree, general sales manager.

SERVEL NAMES STRETMATER

CHIEF METALLURGIST

Promotion of Forrest Stretmater to chief metallurgist at Servel, Inc., Evansville, Ind., has been announced by B. A. Daley, chief engineer of the defense division.

INDUSTRIAL DESIGN FIRM ANNOUNCES FORMATION OF DESIGN RESEARCH, INC.

Chicago industrial designer Dave Chapman has announced the formation of Design Research, Inc. as an affiliate of the parent firm of Dave Chapman, Industrial Design.

Among reasons for formation of the new service organization is the growing interest in the research aspects of design as a management tool to insure basic investment in tools and equipment for long-range industrial planning.

ADMIRAL UPS SIRAGUSA, JR.

Ross D. Siragusa, Jr., has been appointed to the newly-created post of assistant sales manager of the television division, Admiral Corp., Chicago.

TAPPAN STOVE APPOINTMENTS

New assignments for members of the Tappan Stove Co.'s merchandising department have been announced by A. B. Ritzenthaler, vice president in charge of sales.

The new staff and their duties are as follows: George S. Condos, director of advertising and public relations; Neil J. Heaslip, assistant advertising director — development; Thomas E. Nixon, assistant advertising

*A. O. Smith has played
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progress of water heaters*



... and so has Du Pont DULUX[®] enamel!



America's leading home-appliance finish

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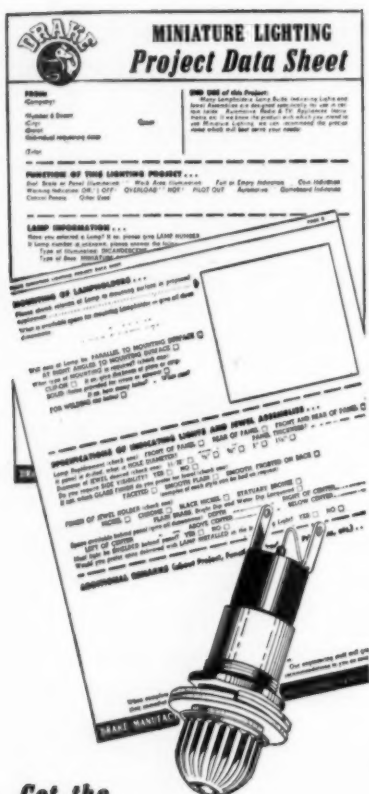
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ing director — production; and Donald W. Kyle, assistant director public relations.

ALEX LEWYT MOVES PLANTS

Alex M. Lewyt has bought a six-story plant at Long Island City, N. Y. from the Ford Instrument Co., division of Sperry Rand Corp., he recently announced. The property includes 315,000 square feet of floor space.

Lewyt is president of Lewyt Mfg. Corp., electronics equipment manufacturers; Lewyt Corp., vacuum cleaner manufacturers; and Lewyt Air Conditioner Corp., which makes built-in wall air conditioning units.

G-E 6-MONTH EARNINGS

General Electric Co. (Schenectady, N. Y.), earnings for the first six months of 1955 reached an all-time high of \$101,892,000, president Ralph J. Cordiner, has announced. This was a 9% increase over earnings of \$93,856,000 for the first half of 1954.

GAS FURNACES SET SIX

MONTH SHIPMENT MARK

Gas-fired warm air furnace shipments during June set two new records, an all-time high for the first six months of the year and a new record for June shipments, according to the Gas Appliance Manufacturers Association.

Edward R. Martin, director of marketing and statistics, reported that 353,200 units were shipped to dealers and distributors during the first six months, an increase of 40.3% over the same period in 1954.

Shipments in June totalled 76,200 units, a gain of 33.2% over June, 1954.

ADMIRAL FREEZER SALES UP

Distributor to dealer sales of Admiral freezers in the first six months of 1955 were 45% higher than in the comparable period last year, it was announced by W. C. Johnson, vice president - sales, Admiral Corp., Chicago.

ROYAL METAL BUYS

DOEHLER METAL FURNITURE

Royal Metal Mfg. Co., manufacturers of professional steel furniture, has announced the purchase of the assets of Doehler Metal Furniture Co., Plainfield, Conn.

George C. Lautemann, executive vice president of Royal Metal, will be in charge of the Plainfield plant. The operations personnel at Plainfield is to be retained and absorbed into the Royal organization.

VACUUM CLEANER SALES UP

23.4%

Factory sales of standard-size vacuum cleaners in June totalled 241,665, 23.4% over June, 1954. The half-year total of 1,617,999 topped 1,322,796 in the same period last year by 22.3%, according to the Vacuum Cleaner Manufacturers' Association.

NORGE SALES \$62,900,000

FOR FIRST HALF OF 1955

Sales of Norge products for the first six months of 1955 amounted to \$62,900,000, Judson S. Sayre, president, Norge Div., Borg-Warner Corp., Chicago, has announced. Volume in the corresponding 1954 period was \$31,800,000.

The first half total is a record for a six-month period, with automatic clothes dryer sales up 204% over 1954 and 164% ahead of May.

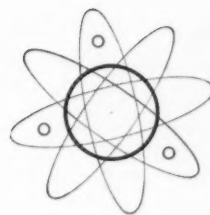
KELVINATOR SALES UP 69%

FOR THIRD QUARTER

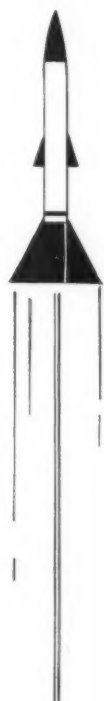
Walter Jeffrey, vice president in charge of sales, Kelvinator Div., American Motors Corp., Detroit, has announced that factory sales of all appliances during the quarter ending June 30, were 69% greater than the same period a year ago.

For the nine months of the fiscal year to date, factory shipments are 33% ahead of the first nine months of 1954 and have surpassed total shipments for all of that year.

SEPTEMBER • 1955 finish



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for new and better glass products — whether it be today or 2000 A.D. — Marsco's craftsmen engineering team will develop them.

The Junior Spaceman above has the best in interplanetary protection — a glass space helmet — because glass can be bowed to fit any desired shape and yet it can be tempered to impart extreme resistance to impact.

You or your family don't need space helmets today but chances are glass could improve the utility and beauty of your product and make it more salable today.

Let Marsco's craftsmen engineering team impart to your product all the advantages of glass.

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Here are some of the applications for Marsco heat-treated, tempered and hardened glass parts:

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| • CLOCK & TIMER CRYSTALS | • LIGHT LENSES |
| • OVEN DOORS | • DIALS & NAME PLATES |
| • RADAR EQUIPMENT | • TELEVISION EQUIPMENT |
| • AIRCRAFT ACCESSORIES | • INSTRUMENTS |
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Special shapes for: Instruments, Gauges, Household and Industrial Appliances.

MARSCO MFG. CO., 2909 S. HALSTED ST., CHICAGO 8, ILL.

DAY & NIGHT NAMES KELLEY

The appointment of George Kelley to the position of manager of heating and air conditioning has been announced by the Day & Night Div., Carrier Corp., Monrovia, Calif.

SCHMIDT TO WORCESTER

PRESSED STEEL BOARD

Leonard C. Schmidt was elected to the board of directors of the Worcester Pressed Steel Co., Worcester,

Mass., at a recent meeting of the board, according to Carter C. Higgins, president and general manager.

NEW GAMA DIVISION

The board of directors of the Gas Appliance Manufacturers Association has announced the formation of a new division — the Gas Unit Heater & Duct Furnace Div. David R. Webster, president, Reznor Mfg. Co., Mercer, Pa., is chairman of the new division.

DAVIS IS VICE CHAIRMAN

OF GAMA RANGE DIVISION

Wendell C. Davis, president, Cribben & Sexton Co., has been appointed vice chairman of the domestic gas range division of the Gas Appliance Manufacturers Association by the division executive committee. He fills the unexpired term of Fred A. Kaiser, resigned.

NEMA MAY SALES FIGURES

The National Electrical Manufacturers Association has announced the following sales figures for May: electric ranges, 106,199; household refrigerators, 354,837; storage water heaters 63,143; and electric farm and home freezers, 54,899.

GAS WATER HEATER SHIPMENTS

SET NEW SIX-MONTH RECORD

Automatic gas water heater shipments reached an all-time high of 1,393,500 units for the first six months of this year, according to the Gas Appliance Manufacturers Association.

Edward R. Martin, director of marketing and statistics, said that the six-month figure was a 23.3% increase over the same period last year. June shipments were the highest on record for that month with 216,500 units, a 4.7% increase over last year.

AIRTEMP AIR-COOLED SALES

UP 101% OVER 1954

An 101% increase in the sale of Chrysler Airtemp air-cooled air conditioners has been disclosed by J. F. Knoff, vice president in charge of sales. The increase covers sales figures for the first 8 months of fiscal 1955, as compared to the same period for 1954.

ADMIRAL 2-WEEK AIR

CONDITIONER SALES UP 51%

Distributor to dealer movement of Admiral room air conditioners in the two weeks ending July 15 set an all-time record, William B. Doyle sales manager of the air conditioner division, has announced. Distribu-



Expand enameling volume with Du Pont Porcelain Enamel for Aluminum

This protective and decorative Du Pont finish for aluminum offers many important features and advantages.

Lifetime finishes of Du Pont porcelain enamel resist abrasion, thermal shock, impact and flexing... can be sawed, sheared, drilled and punched without spalling.

And these rugged coatings add rigidity to

aluminum sheet, allowing you to use lighter gauge aluminum and cut packaging and shipping costs.

FOR MORE INFORMATION on how you can expand your enameling volume and increase customer satisfaction by adding aluminum enamels to your line of finishing service, mail the coupon below.

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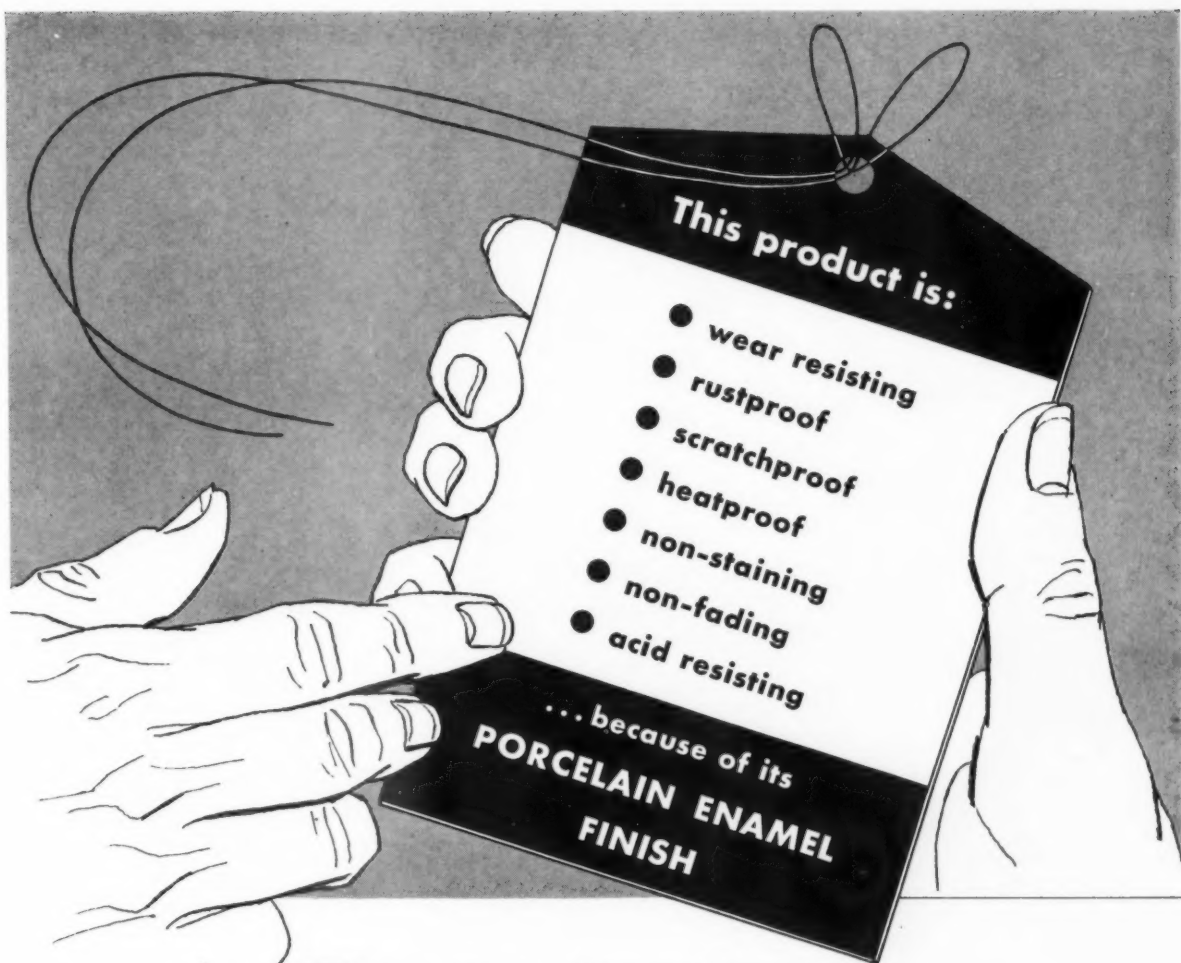
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These features help sell!

Porcelain Enamel provides the longest-lasting, easiest-to-clean, most stain-free, heat-proof, corrosion-resisting, scratch-proof finish known today! With these advantages, your products have greater *sales appeal* because buyers appreciate the beauty and durability of Porcelain Enamel.

Actually, Porcelain Enamel is not just a finish—it is a distinct material composed of a non-corrosive, completely inorganic coating inseparably fused at high temperatures (about 1500 F) to a metal base.

It is strong, rigid and durable. It offers many opportunities to save money by replacing more expensive materials and by eliminating costly finishing operations.

We will be glad to send you an engineering manual in which you will find the very latest design information on this modern material. It may help you use Porcelain Enamel to reduce your costs and increase the salability of your products. Send the coupon today!



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THE FINISHING TOUCH

WHAT IS AN L. V.* REPORT?



by **D. J. Swaninger**
Sales Manager—Stevens Compositions

Back in 1953 Frederic B. Stevens, Inc. made the first announcement of their L. V.* Report service. L. V.* means Laboratory Verified.

For some 20 years Stevens had continued to research and develop superior products in the composition field. We felt the experience and facilities of our laboratories would be of great assistance to our customers—so the L. V.* Report service was started. During these three years we have met and solved many new problems and hundreds of various reports on file attest to benefits to our customers.

An L. V.* Report works like this: You send us several samples of parts for experimental polishing and buffing. You tell us how you are operating at present, give us your problem and what you desire to accomplish.

Shortly and without obligation you will have your Stevens L. V.* Report and recommendations. For polishing—type of wheel or belt, diameter, width, r.p.m., abrasive, composition. For buffing



—description of buff and diameter and r.p.m. and composition used. For coloring—description of buff, number of sections and compositions used. Similar information is furnished for brushing or deburring operations. The L. V.* Report represents the sequence of operations with the type belts, wheels, buffs and Stevens buffing compositions recommended and verified for your job. When your finishing operation may be improved with automatic equipment such recommendations are also included in the report.

Stevens L. V.* Report service was developed for you. Why not write us today?



tor sales were 51% higher than in any other previous two week period.

3 NEW GAMA MEMBERS

Three new members have been elected to the Gas Appliance Manufacturers Association, according to H. Leigh Whitelaw, managing director.

They are the San Gabriel Boiler Mfg. Co., San Gabriel, Cal., maker of hot water heating boilers; Gross Furnace Mfg. Co., Inc., Salem, Va., manufacturer of gas furnaces, and Major Metal Products, Inc., Los Angeles, Cal., maker of gas floor furnaces.

WESTINGHOUSE FIRST-HALF

SALES SET NEW RECORD

Sales of Westinghouse major electric appliances during the first six months of 1955 were highest in company history, announced John H. Ashbaugh, vice president and general manager, Westinghouse Electric Appliance Div., Mansfield, Ohio.

Unit sales to distributors were approximately 25% ahead of sales during the first half of 1954.

STEEL KITCHEN CABINET MONTH

The newest advancement in the design and styling of steel kitchens will be in the national spotlight during the month of September when steel kitchen distributors and dealers join in the second annual celebration of Steel Kitchen Cabinet Month. The event is sponsored by the Steel Kitchen Cabinet Manufacturers Association.

U. S. DESIGNING FIRM

WINS CANADIAN AWARD

Charles H. Standish, president of Designers for Industry, Inc., Cleveland, has been notified by John S. Corrigan, of Toronto, assistant to the president, General Steel Wares, Ltd., that a refrigerator, one of the appliances on which the firm worked in a consultant capacity, was the winner of the Canadian Industrial Design Council award for 1955.

CROSLLEY & BENDIX SALES APPTS.

Promotions of key sales executives have been announced by F. E. Howell, vice president in charge of sales and distribution, Crosley &

Bon Voyage for Canada — Tickets for a Canadian cruise were awarded to RCA distributors with the highest totals for six-month range sales. F. C. Hayer Co., Minneapolis, placed first, with Ohio Appliances, Dayton, and Bruno-New York tying for second place. Pictured on the left are Albert T. Diven and Dwight L. Meredith, sales representatives of Ohio Appliances, with Lewis Selmeier, advertising and sales promotion manager at RCA Estate. At the right are Wayne V. Wright, general manager of the distributor's Dayton branch, and Gordon Hentz, RCA Estate manager of marketing.



Bendix Home Appliances Divs., Avco Mfg. Corp., Cincinnati.

J. L. Armstrong, formerly Bendix laundry sales manager, has become sales manager of all products. H. J. Allen, formerly sales manager of radio and television, is in charge of all merchandising activities for electronics. T. D. Kennedy holds the same position in laundry.

SCHOFIELD HEADS ARMOUR FOUNDATION CERAMIC SECTION

H. Zane Schofield has been appointed supervisor of the ceramics section in the ceramics and minerals research department at Armour Research Foundation of Illinois Institute of Technology, Chicago.

Schofield was a consultant at Battelle Memorial Institute, Columbus, Ohio, before joining the Foundation earlier this year.

FOOTE HEADS TOOLING AT SERVEL

Glenn E. Foote has been appointed superintendent of the tool division at Servel, Inc., Evansville, Ind., announced Walker A. Messick, manager of manufacturing engineering.

ARMSTRONG'S FEENEY ON AIR CONDITIONING COMMITTEE

Louis L. Feeny, air conditioning merchandising manager of the Armstrong Furnace Co., Columbus, Ohio, has been appointed to the committee for the revision of Manual 11 of the National Warm Air Heating & Air Conditioning Association, titled "Design and Installation of Summer Air Conditioning For New and Existing Residences."

PERFECTION SALES APPTS.

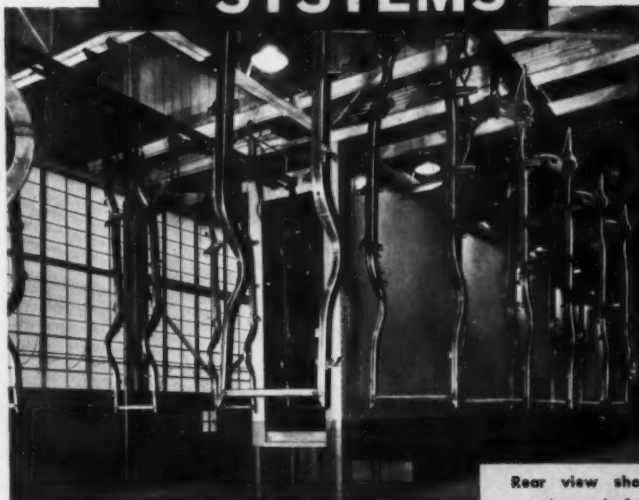
Announcement of the promotion of two of the sales personnel of Perfection Industries, Inc., has been made by Donald G. Wright, general sales manager. W. F. Leuszler has been named sales manager of the appliance division, and W. B. Gathings is promoted to distribution and administrative manager.

finish SEPTEMBER • 1955

THE *Latest* INSTALLATION FOR FINISHING AUTO CHASSIS FRAMES

Uses The **Flow-Coat** Method With

ROSS SYSTEMS



Rear view showing entering end of ROSS Washing Machine — one unit of complete ROSS System for frame finishing.

DOUBLE THE OUTPUT

per hour over the older dip-paint method

For one of the world's leading builders of automobiles, this complete ROSS System sets a new standard for production far higher than that heretofore achieved by other makes of equipment. The ROSS System includes a 3-stage washer equipped with 1500 spray nozzles; a Flow-Coat machine providing facilities for painting 400 frames per hour—double the capacity of older methods; a Dry-Off Oven, a zoned Paint Bake Oven, and entirely new type gas-fired heating apparatus. Write for full information.

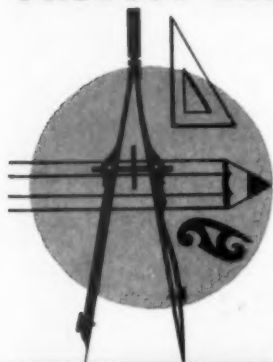
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*Let Our Experienced Designers
Work With You in Creating
Smart, Modern Hardware . . .
Engineered to Cost You Less*

National Lock design engineers are specialists in creating distinctive hardware to meet your individual requirements. With an extensive background in materials and production techniques, they can help you secure more for your dollar investment. These National Lock stylists will work independently or in cooperation with your own designers. This service covers a wide range of items, including zinc die cast, aluminum die cast, stampings, plastics in both compression and injection molding. Write us for full information on how we can serve you.

Distinctive Hardware
all from 1 source

REFRIGERATOR HARDWARE

CABINET HARDWARE

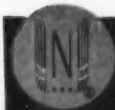
STOVE HARDWARE

FURNITURE TRIM

CASTERS
KNOBS

BOLTS
SCREWS

HANDLES
HINGES



NATIONAL LOCK COMPANY
ROCKFORD, ILLINOIS

NEW GAMA WATER HEATER DIVISION MEMBER

Trageser Copper Works, Inc., Maspeth, Long Island, N. Y., has been elected to the Gas Water Division, Gas Appliance Manufacturers Association, according to H. B. Carbon, division chairman. This brings total membership in the division to 49.

BRYANT ANNOUNCES DEALER INCENTIVE PROGRAM

A dealer sales incentive promotion, billed as "Mr. B. goes to Bermuda", has been launched by Bryant Div., Carrier Corp., Syracuse, N. Y., it was announced by Howard L. Clary, Carrier vice president and general sales manager at Bryant.

Each enrolled dealer is assigned a "bonus goal", a dollar figure equivalent to a fixed percentage of his purchases of Bryant equipment in 1954. Once his purchases total \$1,000 he receives prize point checks applying toward a Bermuda trip or any merchandise item in Bryant's catalog.

JUNE GAS RANGE SHIPMENTS RISE

Edward R. Martin, Gas Appliance Manufacturers Association, director of marketing and statistics, has reported that during June 182,000 ranges were shipped to distributors and dealers, compared to 174,300 shipped during June, 1954, an increase of 4.4%.

This makes a total of 1,905,800 ranges shipped during the first six months of the year, a 10.8% increase over the 988,600 shipped in the same period of 1954.

Production milestone — for Kelvinator was reached in August when the company's 15,000,000th appliance rolled off the assembly line at the Grand Rapids, Michigan, plant. On hand to apply the milestone banner to a Foodarama were George H. Beld, left, plant works manager, and Joseph W. Lelivelt, manager of manufacturing at Detroit. Kelvinator built its first refrigerating system in 1914 and has continued to produce since that date. In 1926, the company acquired the Leonard Company, an ice-box manufacturing firm launched in 1881.



WHIRLPOOL MARION PLANT INITIAL APPOINTMENTS

Initial appointments to the executive staff of the Marion, Ohio, plant division of Whirlpool Corp. have been announced by Donald W. Alexander, vice president in charge of operations.

Glenn A. Evans is general manager; D. C. Campbell, works manager; H. R. Neighbours, chief plant engineer; W. R. Crawford, director of product engineering; Paul Cressor, director of purchases; T. L. Hufert, director of industrial and public relations; R. A. Wyman, chief industrial engineer; E. R. Woltmann, engineer production control; Willard Bennett, manager of general accounting; H. J. Schroeder, division controller; and William Stevenson, master mechanic.

Purchased last February from Motor Products Corp., the 250,000 square foot plant is being converted to the production of automatic clothes dryers.

MANGLE MGR. OF MAGIC CHEF CLEVELAND PLANT

John H. Mangle, for the past nine years as an executive with the Glenn L. Martin Co., Baltimore, Md., has been appointed by Magic Chef, Inc., as general manager of its Cleveland, Ohio, plant, announced Cecil M. Dunn, Magic Chef president.

The Cleveland plant, devoted primarily to the production of commercial gas cooking equipment, is one of two plants that manufacture Magic Chef products. The other, in St. Louis, Mo., produces domestic gas and electric ranges, and oil, gas and kerosene space heaters.

Another milestone—was reached this summer when the 500,000th refrigerator rolled off the assembly line at the new Westinghouse plant in Columbus, Ohio. Inspecting the refrigerator prior to crating and shipment are E. L. Smith, right, works manager, and H. W. Dailey, manager of industrial relations. The model joins over 5,000,000 other Westinghouse refrigerators made in Mansfield, Ohio. In addition to refrigerators and home freezers, the Columbus plant produces the Wash-N-Dry Laundromat—a combination washer and dryer.



finish SEPTEMBER • 1955

TICKETS

TO ONE SOURCE

No. 2230

No. L-40-A

No. M-322-A

No. 9316

No. 490

No. 240-L

No. 1903-B

No. 340-T

No. 9209

No. L-52-P

No. 1885

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NEWS ABOUT SUPPLIERS

GORDON HEADS DU PONT

ADVERTISING DEPT.

Wallace E. Gordon, assistant director of sales of the Grasselli Chemicals Dept., E. I. du Pont de Nemours & Co., Inc., Wilmington, Del., has been named director of the company's advertising department, succeeding William A. Hart, retired.

WHEELING STEEL COMPTROLLER

J. Gordon Hutchinson was elected comptroller of Wheeling Steel Corp., Wheeling, West Va., at the July meeting of the board of directors, according to J. L. Neudoerfer, president. Hutchinson joined Wheeling Steel in January as assistant comptroller.

U OF I GRADUATE TO CHICAGO VIT. RESEARCH LAB.

Harry W. Carpenter, a June graduate of the School of Ceramic Engineering, University of Illinois, has joined the Chicago Vitreous Corp. research laboratories, Cicero, Ill., according to E. E. Howe, vice president.

ALCOA KEY SALES APPOINTMENTS

Three major sales department appointments have been announced by Aluminum Co. of America, Pittsburgh. Lewis P. Favorite has been named manager of product sales. Frederick J. Close has been appointed manager of market development, and W. S. McChesney, manager of industry sales.

HOFSTETTER HEADS NEW

FERRO WESTERN REGION

Creation of a new position of regional manager, western region of frit and glaze div., Ferro Corp., Cleveland, has been announced by C. D. Clawson, president.

G. W. Hofstetter, manager of the division, has been appointed to this new position and will headquarter in Chicago. He will be in charge of

the sales districts of Chicago, Detroit and St. Louis, each of which is headed by a district manager.

WESTINGHOUSE FORMS

INDUSTRIAL HEATING DIV.

The formation of an industrial heating division in Westinghouse Electric Corp. has been announced by John K. Hodnette, vice president and general manager of industrial products.

The new unit will combine the functions of induction heating activities and the industrial heating department. Headquarters will be at Meadville, Pa.

WATTS, BINKS V P, DIES

Ernest F. Watts, vice president, Binks Mfg. Co., died of pneumonia Saturday, July 30, in Columbus Hospital, Chicago.

Watts joined Binks in 1933 as advertising manager. In July, 1941, he was elected vice president — sales, and in March, 1942, became a member of the board of directors.

FENTON HEADS

LITHIUM RESEARCH DEPT.

A newly formed department of product research and development has been announced by Herbert W. Rogers, president, Lithium Corp. of America, Inc., Minneapolis. Walter M. Fenton, formerly sales manager, has been appointed director, and J. Douglas Campbell, formerly head of the New York sales office, succeeds him.

NEW KAISER ALUMINUM PLANT

Kaiser Aluminum & Chemical Corp. Oakland, Calif., has announced that ground breaking on a 160-acre site will take place soon on a \$4 million plant. It is expected to be completed by late spring, 1956.

YOUNGSTOWN SHEET & TUBE

CONSTRUCTION PROJECT

A new battery of 75 coke ovens will be constructed at the Indiana Harbor Works of The Youngstown Sheet and Tube Co., it was announced recently. The battery is expected to be in operation by September, 1956.

This is the third large construction project for the Indiana Harbor Works that has been announced since last May.

Fellowship student visits Pemco — Marlin Miller, Jr., holder of the Karl Turk Fellowship for graduate studies at Harvard University, recently visited the plant of Pemco Corporation, Baltimore, Md., which sponsors his studies. On the plant tour, Richard Turk, president and chairman of the board, is showing Miller one of several smelters which produce porcelain enamel frit continuously.



HUTT HEADS FERRO

BUILDING PRODUCTS DIV.

Appointment of Glenn A. Hutt as vice president, building products div., has been announced by R. A. Weaver, chairman, Ferro Corp., Cleveland.

This division, "newly-created because of the many increasing interests of Ferro in the architectural field", will develop and promote such items as porcelain enamel curtain-wall panels, wall tile, porcelain enameled steel and aluminum roof panels and other products which use Ferro basic materials.

Hutt, a twenty-two year veteran with Ferro, served most recently as vice president of advertising and market research.

ARMCO'S SEBALD V P OF

IRON & STEEL INSTITUTE

W. W. Sebald, president, Armco Steel Corp., Middletown, Ohio, has been elected a vice president of the American Iron and Steel Institute, it was announced recently. He also serves on the board of directors and the executive committee of the organization.

SHELL CHEMICAL SYNTHETIC

RUBBER RESEARCH UNIT

In line with Shell Chemical Corp.'s expanding activities in the synthetic rubber field, a manufacturing research unit has been established at the Torrance, Calif., plant. C. W. Humphreys, manufacturing vice president, announced.

FOLLANSBEE METALS PROMOTIONS

Two promotions have been announced by Thomas E. O'Neal, vice president in charge of the Rochester

plant of Follansbee Metals Corp. Edward J. Caffery is manager of industrial sales and products, and Raymond Bolton is manager of sheet metal sales and products.

INLAND STEEL EXPANDS

COKE-MAKING CAPACITY 21%

Inland Steel Co., Chicago, has announced the construction of a new battery of 37 coke ovens, part of a multi-million dollar construction program for the Indiana Harbor, Ind., works. It will increase the plant's coke-making capacity by 21%.

PENNSALT SALES PROMOTIONS

The promotion of J. Stanley Hall as sales director of the Chemical Specialties Div. and Paul C. Hurley as sales manager of the laundry and dry cleaning department have been announced by Albert H. Clem, general manager of the Chemical Specialties Div., Pennsylvania Salt Mfg. Co., Philadelphia.

BLAIR IS HOMMEL SOUTHWEST

REPRESENTATIVE

E. M. Hommel, president, The O. Hommel Co., Pittsburgh, Pa., has announced that O. Hommel has revised its sales policy and has direct sales representation in the southwest. The southwest territory representative is William H. Blair, with headquarters in Dallas, Texas.

U. S. STEEL NAMES BROCK

Loring S. Brock has been appointed director, product development division — commercial department of United States Steel Corp., Chicago, it has been announced by David F. Austin, executive vice president.



GLENN HUTT



ERNEST WATTS

UDYLITE APPOINTMENTS

L. V. Nagle, executive vice president of the UdyLite Corp., Detroit, has announced the following appointments in the UdyLite Div: L. Eugene Drury, facilities manager; William J. Blashill, manager of manufacturing; and Louis J. Minbiole, Jr., sales manager.

SPINCRAFT BUYS FELCON TOOL

Purchase of the Felcon Tool and Die Co. by Spincraft, Inc., Milwaukee, has been announced by George Farley, executive vice president of the metal spinning, stamping and fabricating firm.

NORTHWEST CHEMICAL EXPANDS

Northwest Chemical Co., Detroit, has completed a new addition to present facilities, doubling both warehousing and finished goods storage areas, according to H. J. McCracken, president.

TUTTLE & KIFT, FERRO

ELECTRIC PRODUCTS &

FERROD MFG. CO. MERGE

A merger of three Ferro Corporation subsidiaries located in the Chicago area has been announced by Robert A. Weaver, chairman, as a move to streamline and integrate management and operations of the companies. →

H. W. CARPENTER



WM. H. BLAIR



J. D. CAMPBELL



G. W. HOFSTETTER



J. G. HUTCHINSON



W. M. FENTON



Tuttle & Kift, Inc., Chicago, becomes the corporate unit. Ferro Electric Products, Inc., Kirkland, Ill., and Ferrod Mfg. Co., Batavia, Ill., become divisions.

John A. Sullivan president of Tuttle & Kift, becomes president of the consolidation and has announced the appointments of R. P. Blodgett as vice president of the electric range div., D. V. Tuttle as vice president of the Ferro electric switch and control div., and H. F. Bond as vice president of Ferrod specialty heating unit div.

SOLAR STEEL ENLARGES PLANT

Solar Steel Corp. has announced completion of the expansion program of the Worcester (Auburn), Mass., plant, where warehousing facilities were enlarged by 50%.

ACME STEEL NAMES SWINGLE

Roy E. Swingle has been appointed manager of the shippers laboratory, Acme Steel Co., announced John E. Ott, vice president

in charge of product planning. The laboratory develops and tests new

packaging and shipping techniques for the company and customers.

Automatic control of metalworking equipment

(Continued from Page 89)

control is capable of easy application, and that little machine modification is necessary to adapt it for use. Its main application, however, will be by machine tool manufacturers who will apply it directly on to their ma-

chines, rather than to have it installed on already existing equipment.

For additional information write to *finish* or to General Electric Company, Schenectady 5, New York, requesting bulletin GEA-6328.

Finishing outdoor lawn furniture

(Continued from Page 31)

where they bake out for 27 minutes at 275-325° F. Finished parts then go to assembly and packaging, ready for shipment.

In addition to lawn furniture parts, the top, back and two sides of gas space heaters are painted electrostatically, as are handles for the company's newest product — the "Cue Cart" for outdoor cooking. Although the parts are of different sizes and shapes, they are easily painted simply by adjusting the reciprocating disc atomizer to meet their various paint-

ing requirements.

Saunders Jones, factory manager, reports that since his company installed the electrostatic equipment, paint mileage has been more than doubled. A typical chair run, said Jones, recently showed they were getting 424 square feet per gallon of paint, including hand touch-up on recessed areas difficult to reach with electrostatic spray.

Production has also gone up from 40 to 50 complete gliders per hour and from 100 to 150 chairs per hour.



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COLOR...our specialty


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PARTS WASHERS

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**HEAT
and AIR
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ESTABLISHED 1912

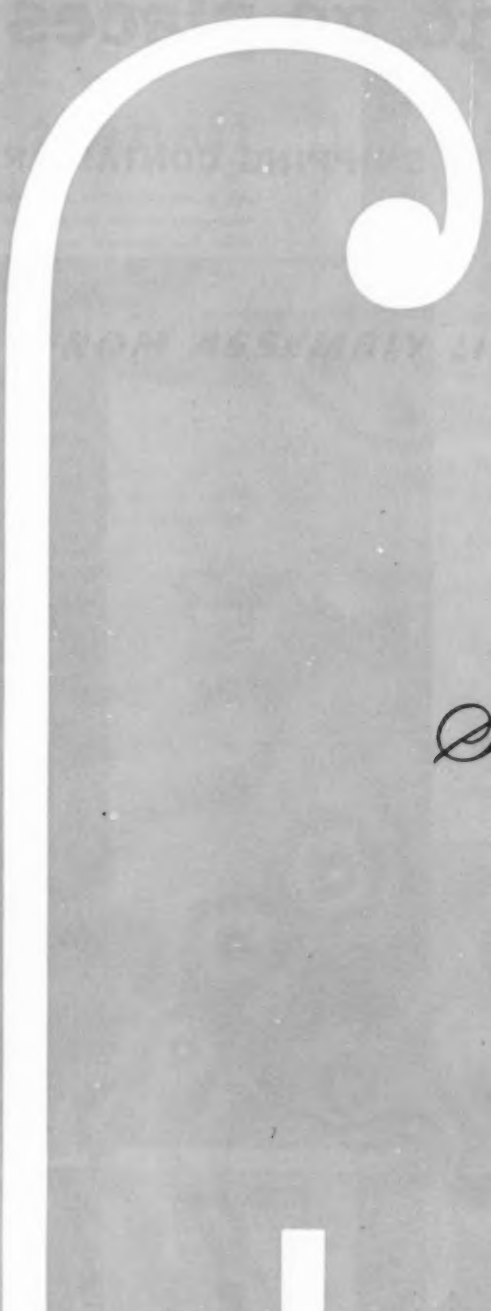
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September • 1955

safe transit

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DESIGNED to go places

HEAVY-DUTY SHIPPING CONTAINERS FOR

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- Time saving in packing . . . proved by actual time studies.
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Would you like to know how this versatile, sturdy container can be adapted to meet your specific needs? Write us for further information. INTERNATIONAL's heavy-duty shipping containers are designed to go places. And—provide safe transit!




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safe transit

A monthly trade publication section devoted to improved packaging and shipping and materials handling practices in the home appliance and metal products manufacturing field.

Plant experience information for all executives and plant men interested in the problem of packaging and shipping improvement and loss prevention.

Complete information on the National Safe Transit pre-shipment testing program for packaged finished products, and detailed progress reports of divisions and sub-committees of the National Safe Transit Committee.

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HOW NST TESTS CORRELATE

WITH PACKAGED PRODUCT SHIPMENTS

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IT'S TIME YOU GET EXCITED

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NST CERTIFICATION FOR

SEVEN MORE COMPANIES ..ST-12

PACKAGING, HANDLING SHOW

SET FOR NEW YORKST-15

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Safe Transit labels — are now applied to packaged products shipped from the Raleigh (N.C.) meter plant of Westinghouse Electric Corp. Shown in the photo, left to right, are: C. Cole, shipping clerk, G. E. Knipe, manager of order service; J. A. Babcock, plant manager; and E. S. Votey, traffic supervisor.

New techniques — to cut freight loss are shown in this 50-foot boxcar, which is one of 14 in Union Pacific's "Perfect Shipping" train. Perforated steel lining and cross braces are used here to hold heavy freight like packaged home appliances firmly in place during transit.



EXPORT: Placing a Chicago Mill and Lumber container over a Voronado air conditioner on the O. A. Sutton assembly line.



DOMESTIC: An air conditioner in "offset" type wirebound crate on the dolly of the incline impact test machine.

CHICAGO MILL helps SUTTON *Deliver Safely*

**Wirebound
Nailed or Hinge Corner
Cleated Plywood
Cleated Cravener
Cleated Corrugated
Watkins Type Containers
Shop and Tote Boxes
Woodsteel Nesting Boxes**

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FOR DOMESTIC OR EXPORT
FOR PEACE OR DEFENSE

**A shipping container for
every shipping purpose.**

The O. A. Sutton Corporation, manufacturers of air conditioning units and fans, is another one of the leading appliance manufacturers using Chicago Mill and Lumber Company containers to provide safe shipment for their finished product. Where the going is toughest (export) Chicago Mill provides safe delivery any place in the world with hinge-corner plywood. For domestic delivery of large units, wirebound is the answer.

In order to meet the requirements of the growing air conditioning industry, Chicago Mill had its engineers design the best possible container for the protection and shipment of room air conditioners (for domestic or export). The hinged corner plywood container that was developed offers these advantages:

Maximum protection
Low cost
Fast assembly

You can stack them 20 high
for compact storage with a
good factor of safety.

Contact your Chicago Mill representative for complete information

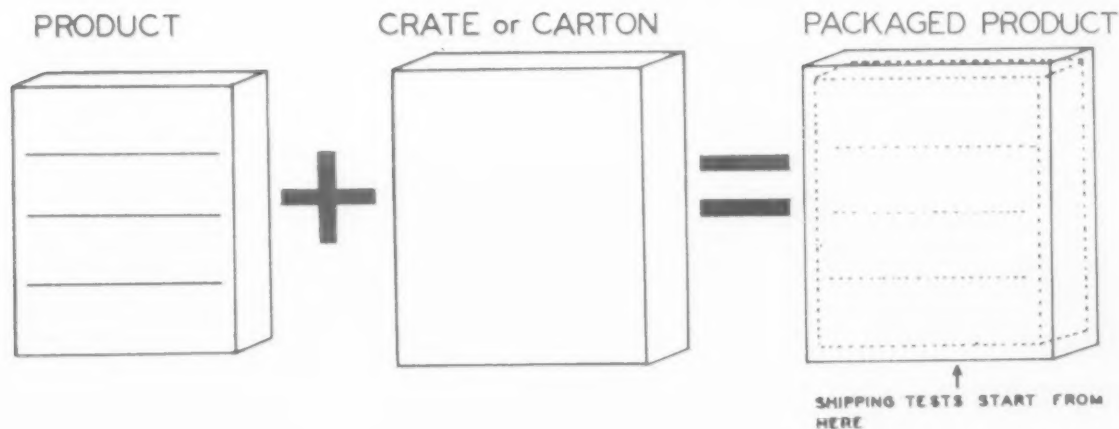
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Tallulah, Louisiana • South Fork, Colorado • Chicago, Illinois



How the Safe Transit tests correlate with packaged product shipments

thousands of miles of test shipping are back of NST correlation work

by *Ralph F. Bistee* • GENERAL CHAIRMAN, NATIONAL SAFE TRANSIT COMMITTEE.

A CONSIDERABLE part of the early information on vibration and shock was confined to data resulting from test shipments by rail. When the National Safe Transit Program was established, it was decided to do some additional correlation work including all hazards from the time the Packaged Product leaves the assembly line until it reaches its final destination. Therefore, test shipments were made by all major methods of transportation, including *railway express, railroad freight* (LCL and carload), *motor trucks* and *air cargo*. Then, *special emphasis* was placed on testing of *in-plant handling* and special truck shipments which would be the equivalent of local delivery.

All in all, in excess of 1/2 million miles of test shipping has been con-

ducted and the data recorded. As the accompanying information will show, the scope of the Safe Transit Program to include handling and local delivery was of major importance, as all data points to the fact that major shocks are encountered under handling conditions in the great majority of cases rather than while in the carrier's vehicle.

Test shipments by air, railroad and highway

Air cargo tests—Some 15,000 miles of air cargo tests were conducted, and this data was correlated with information developed using the test procedures of the National Safe Transit Program. Four of the major air lines cooperated in the program through Air Cargo, Inc., by carrying test ship-

ments over specified routes and by having technical men cooperate with the NST Technical Planning Division.

Arrangements were made with top personnel of the cooperating lines so that test shipments could be made without attracting attention as special cargo. Attention was given to transfer points so that they would represent a good cross section as to type and location, such as transfer from air line terminal, in metropolitan area to the airport.

It was found that, in all instances, maximum shock was encountered during *handling* and not while in transit. The only time shocks were recorded in the 5th zone was during loading, handling at airport and unloading.

Railway express tests—Through cooperation with the Railway Express



Test in this photo involved two cars which were those directly attached to the locomotive. The coal car shown was part of a group of 20 stationary cars in the test to which the test cars were coupled at various speeds.

Agency, tests were made under normal conditions of shipment in express cars. Five different railway systems were involved. Here again, the actual shocks during the movement of the railway cars were less than those encountered during the actual loading and unloading.

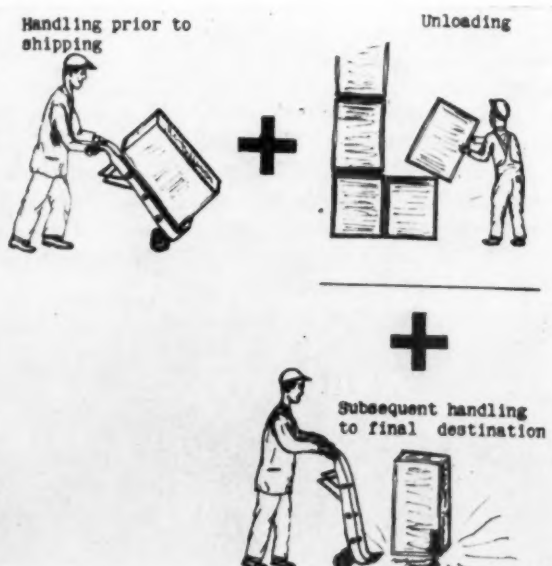
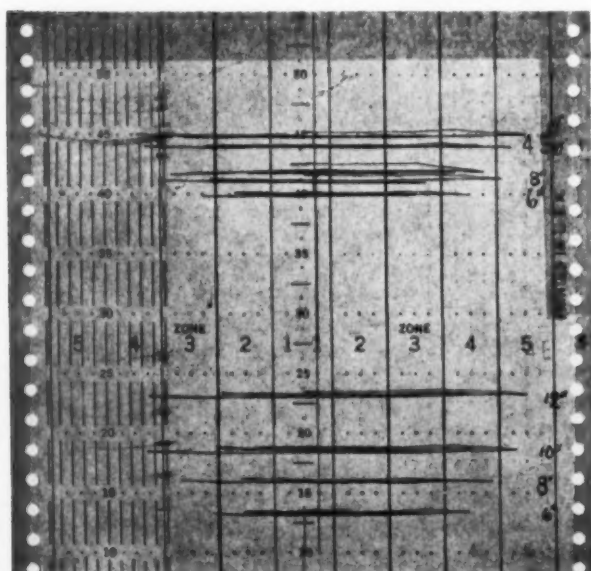
Test shipments by railroad freight—Many test shipments were made by railroad freight, both carload and LCL. Here again, in practically every

instance, it was found that in loading and unloading, shocks were incurred that were in or approaching the 5th zone. Some shipments did not show 5th zone impact at any point during car movement. Shocks extending into the 5th zone were encountered during car shifting and switching and a few cases where the car apparently went into resonance.

Motor trucks—Data on truck shipments were obtained through cooper-

ation with the American Trucking Association and its members. Test periods in this instance cover 18 months. This included loading by the manufacturer and at the truck line terminal, interline transfer to another truck line and then to its ultimate terminal destination, and handling and transfer to the local delivery truck system, terminating at the ultimate destination. Local deliveries were made over various types

Handling Shock Measurements—This recording tape shows shocks as received by a Packaged Product when handled on a 2-wheel truck and the leading end of the crate permitted to fall to the floor from different heights (6", 8", 10" & 12" as shown on tape). Drawing at right shows typical handling shocks. The shock recorder was attached to the crate side. The Packaged Product was an automatic dishwasher in a crate 38" high by 29" x 28" base size, with a gross weight of 200 lbs.



of National and State Highways, County and Rural Roads, plus normal delivery routes in several cities. In some instances, the technician actually rode the trucks with a stop watch in order to record points of apparent greatest shock, such as rough streets, railroad crossings, etc., in order to be able to check these against the tape record on shock recorders. Under these forced conditions, the in-transit shock was comparable to the handling shock.

Summary of correlation research

1. The worst shocks under all conditions observed in the majority of cases occurred during handling.
2. The 5th zone established as the minimum shock requirement for the packaged product under the National Safe Transit Program, represents no more than the conditions normally encountered in transportation and handling.
3. The NST vibration tests are based on the summary of the vibrational data obtained during the many tests with the railroads, express, air cargo and motor trucks.

Instrumentation

Instrumentation is very important. Scientific correlation requires accurate instrumentation. The instrument must be of such design that the average layman can use and interpret the

Editor's Note:

National Safe Transit has in the making a color-sound film (available soon) to show complete details of the basic carload test. This is in addition to a color-sound film on the NST program for testing individual packaged products.

records, as the whole program is based on simplicity.

The committee is anxious to have other instruments which can be recommended for use in this program. However, in order to be able to correlate future results with past results, it is necessary that the instrument have the same basic calibration characteristics as those now used.

Anyone who has an instrument they feel has the proper characteristics may submit it to the U. S. Testing Laboratory, Hoboken, New Jersey, at which laboratory the instrument can be tested to determine

whether or not it has the proper operating characteristics.

Vibration

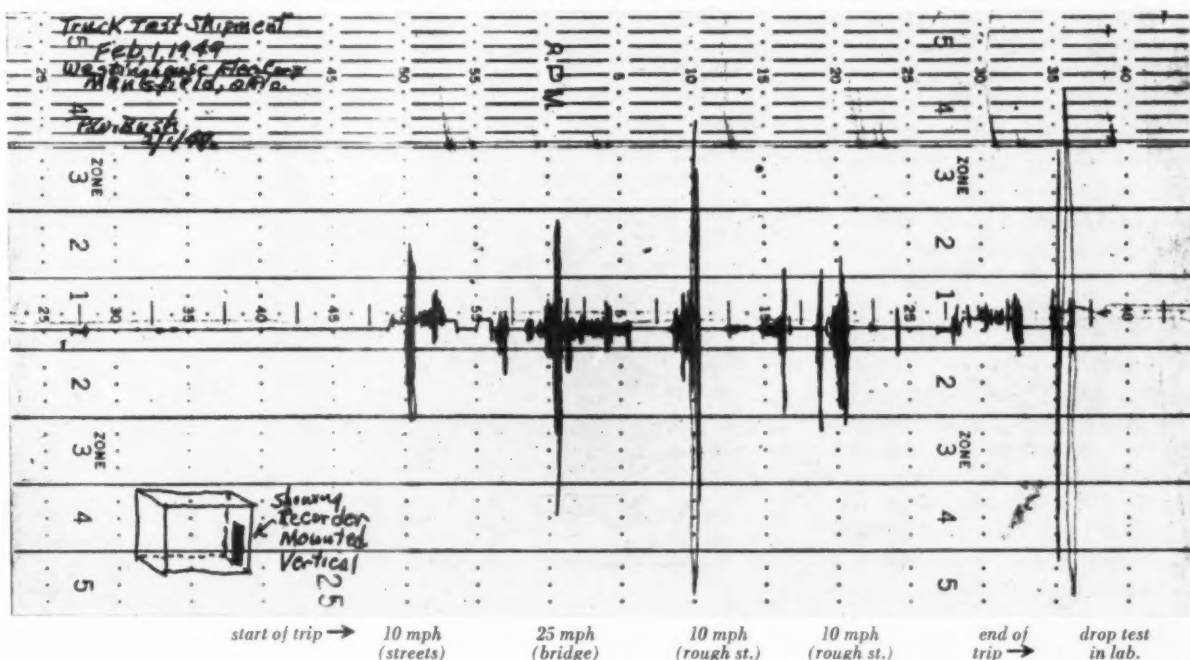
The vibration machine is designed to simulate during testing the vibrational forces, motions, resonance, accelerations, bumps, jars and weaving encountered in transit.

It is important to note that this machine subjects the packaged product to an *accelerated* test. It will show up the weak points in packaged products in an *hour or less*. Only under abnormal conditions will a carrier submit a packaged product to a continuous destructive force equivalent to $1\frac{1}{4}$ G as occurs during this test.

The similarity of action of this machine with the action of railroad freight cars is based on the data showing that vibrations are set up in freight cars by their wheels going over the rail joints. Rails are usually 33 ft. long and are usually set alternately. Therefore, every $16\frac{1}{2}$ ft. the car wheels on one side or the other, hit a joint. This causes the car to vibrate at a frequency (cycles per second [cps]) in proportion to the miles per hour (mph) speed of the car, in accordance with the formula:

$$*Frequency (cps) = .089 \times mph$$

Following shows tape from recorders on a truck test shipment over city streets. The packaged product weighed 80 lbs. (This is shown with the standard 12" laboratory drop test as a comparison at the extreme right on the chart.)



For example, at 45 miles per hour, the frequency of car vibrations is $45 \times .089 = 4$ cps.

Flat wheels, rail depressions and other variables sometimes affect these periodic vibrations and either minimize or increase their amplitudes or set up new frequency periods.

An additional basic consideration is the natural frequency of the car springs. This may be evaluated from the formula:

$$* \text{Frequency in cps} = \frac{3.13}{\sqrt{\text{Deflection in inches}}}$$

Thus, if the deflection is $\frac{5}{8}$ " (.625) the natural frequency is $3.13 \div \sqrt{.625} = 4$ cps. If, then, the speed of the car is 45 mph and the car is loaded so that the springs have a deflection of $\frac{5}{8}$ ", the rail joint frequency and the natural frequency of the springs have the same values, "resonances" occur. This causes the car to bounce violently and the springs will go solid repeatedly, with consequent "hammering" of the object in the package against its interior packing. Depending upon the properties of the packing, it may thus lose its elasticity and become useless.

Incline impact test (conbur)

The incline impact test specified in the Safe Transit procedure is carried out using the Conbur tester. This apparatus was originated and designed by two engineers in the Freight Container Bureau of the Association of American Railroads.

The instrumentation used in conducting Safe Transit tests is the same as that used in conducting Conbur tests so that tests conducted at various locations on different equipment are comparable in that the same degree of impact is applied in each case.

Handling—and the 5th zone

As a result of data from test shipments, the 5th zone on the recorder has been established as the end point in the Conbur tests. This point was based on the results of many hundreds of test shipments which were conducted with a recorder placed in the test shipment. These tests indicated that impacts into the 5th zone

* Formula is from engineering data of L.A.B. Corp.

were not uncommon, particularly during car switching, handling, etc.

A very dramatic demonstration, pointing out that using the 5th zone as an end point is not too severe, can be noted by placing a recorder on the packaged product and dropping one bottom edge of the packaged product a distance of 12" onto a hard surface, while using the opposite bottom edge as a bearing point (similar to unloading from a two wheel hand truck). Dependent upon the type of floor or surface (such as wood or concrete), drops of 8 to 12 inches may produce similar results. During this demonstration, the instrument will record a 5th zone impact.

To eliminate any misunderstanding regarding the 5th zone shock as recorded on the instrument in, for an example, the railroad car *vs.* the 5th zone shock as recorded on the incline impact tester in the laboratory, the following information is given:

A railroad car has a draft gear with a spring to deflect on impact and a certain closing time. The conbur has a back stop which may or may not yield on impact and a track with a wide range of friction characteristics.

In other words, the shock in any given zone of the recorder is the same whether it is recorded in a railroad car or on an incline impact tester in the laboratory.

Railroad correlation work in freight cars

In all of the railroad correlation work in the freight cars, the zone of impact is equivalent to the miles per hour at impacts for each zone as outlined in the following table:

Zone of Shock	Miles Per Hour	Railroad Acceptance Rating
Zones 1 and first half of Zone 2	3 to 4	Normal handle
Second Half Zone 2	5	Borderline
First Half Zone 3	6	Rough handling
Second Half Zone 3	7	Rough handling
First Half Zone 4	8	Rough handling
Second Half Zone 4	9	Rough handling
First Half Zone 5	10	Extremely rough handling
Second Half Zone 5	11 - 12	Extremely rough handling

It should be pointed out that it is not only desirable but necessary to use the shock recorder in determining the proper point of release during the Conbur tests, because each individual Conbur may have variables such as increased friction on the rails due to condition of rails or wheels and some play on the back stop depending upon method of anchoring. These variables will affect the length of travel on various Conburs to obtain a 5th zone impact.

The National Safe Transit Technical Committee has one more pre-shipment test that is offered to all manufacturers that are certified under Project 1 and Project 1A (covering Packaged Products).

The additional test resulted from correlation work that was carried on for a period of over six years. It covers the pre-shipment testing of completely loaded freight cars.

Loaded freight car —a giant packaged product

The loaded freight car is considered as one "giant" packaged product as it is subjected to the test on what might be termed a giant conbur or incline tester. This can be accomplished in the railroad yards with the aid of a switch engine pushing the car and permitting the individual freight car to coast against the "back stop" of other freight cars. This provides a test with a crushing force as it actually exists in a freight car during switching. This test uses the instrumentation, recorded in zones. It is simply a pre-shipment testing procedure and does not attempt to specify the method of loading or car blocking.



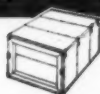
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There is practically no limit to what you can ship in a Wirebound . . . for Wirebound is a *most versatile container*. Wirebounds combine the strength of steel wire with the resiliency of wood in limitless combinations. For example, look at the rock bit box on the left. This small, rugged Wirebound eliminated previous stacking failure and in-transit damage losses. So did the Wirebound band saw crate on the right. For greater safety and greater savings, investigate Wirebounds . . . today!

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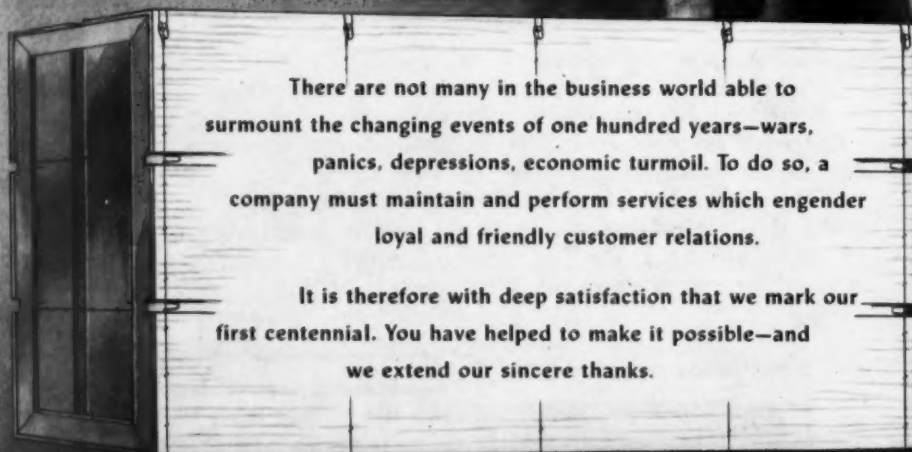
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It's time you get excited about claims

**"the greatest contribution to the reduction of transportation
which we will see in our generation"**

JOHAN M. MILLER, executive secretary of the American Trucking Association National Freight Claim Council, presented an interesting discussion on "It's Time You Got Excited About Claims" at a Northeastern Motor Carriers Claim Conference in Philadelphia recently.

It is with pleasure that the editors of *finish* present a few pertinent comments from Mr. Miller's talk. There will be no attempt to hold the continuity of the presentation, but a few brief comments will be presented as a prelude to his reference to the National Safe Transit Program and its objectives:

"To reach the men who handle the freight requires more than enthusiasm; it requires direct communication with each individual who has anything to do with the movement and handling of freight. Employee meetings, posters, pamphlets, photographs have all been used successfully in getting the claim prevention message to freight handling employees. Once the employee is properly instructed, however, constant supervision must continue to prevent retrogression. Incentive programs and contests have been found exceedingly valuable in maintaining employee interest and cooperation. . . .

"There is no question that the claim ratio of a carrier often means the difference between red and black — between success and failure. The cost of claims caused by carelessness can easily wipe out the narrow margin of profit in our industry. Statistics compiled by one carrier in our industry indicated that for every \$50 claim it paid out, it had to transport 90,000 pounds or 5 1/3 truckloads

of freight without any profit whatever . . . a \$500 claim meant that over 53 trailerloads moved without production of earned revenue while a \$1,000 claim meant that 1,818,000 pounds or about 107 trailerloads had to be moved to produce sufficient earnings to cancel the loss occasioned by carelessness.

"These figures are astounding but they clearly indicate that the cost of claims which, as I have said, our customers eventually pay is a serious concern not only to the carrier that has to pay them, but to its customers. Can there be any stronger argument for your efforts to assist all carriers — rail — motor — air — and water — in reducing the tremendous economic waste represented by the cost of freight loss and damage claims . . .

"Every shipper and every consignee of any size eventually establishes a reputation with the carrier industry just as every carrier establishes its reputation with the shipping public. All of us — shippers — carriers — and receivers — should periodically reflect on the reputation we are establishing with those with whom we do business. . . .

"Most of our shippers are making a sincere effort to package their commodities properly and are using containers of sufficient strength and with sufficient interior packaging to adequately protect their products during transportation. Packaging engineers have made tremendous advances in recent years, and I commend to you especially the *National Safe Transit Program* which is sponsored by the Porcelain Enamel Institute. Common sense tells us that shippers should design their packaging to hold

its own with other package freight — to withstand the ordinary hazards of transportation — to travel to destination without damage.

"If you are merely packaging your products to meet the minimum standards specified in the carriers' classification, you have missed the whole point of proper packaging, which is to pack shipments to travel without damage from the ordinary transportation hazards.

"The National Safe Transit Program was established on the basic premise that the ultimate objective of the manufacturer and all concerned with distribution is to get the packaged product to destination in undamaged condition.

"Before establishing its prescribed pre-shipment tests, the *National Safe Transit Committee*, in cooperation with all modes of transportation, made numerous test shipments of packaged products which also contained a shock recorder to develop the extent of shock encountered in handling during manufacturing, handling by the carrier, shocks encountered during movement of the goods in transportation and after receipt of the goods by consignee. These tests established that the greatest shock encountered from the assembly line to the ultimate customer was during the handling of the goods by the manufacturer, the carrier, and the consignee — all of these parties were guilty of handling which could cause damage.

"As a result of the conclusions developed from these test shipments, the National Safe Transit Committee prescribed certain tests for packaged products. . . .

"During the Annual Membership Meeting of the ATA National Freight Claim Council in the Statler Hotel in St. Louis, which was held in June of last year, R. F. Bisbee, who is in charge of quality control for Westinghouse Electric Co., Mansfield, Ohio, and who is also national chairman of the National Safe Transit Committee and who has devoted thousands of hours to the promotion of the National Safe Transit Program, appeared on our program as a speaker, and both he and our Council extended invitations to the numerous shippers in this and surrounding areas to attend our meeting and hear about this program, which undoubtedly represents the greatest contribution to the reduction of transportation damage which we will see in our generation. . . .

"I commend to you the National Safe Transit Program and its pre-shipment tests for packaged products. I urge you to investigate this program in an effort to determine if it will not, in fact, provide you with a

means of reducing your present packaging costs as it has done for many who have subscribed to this program. If you have not secured the services of a packaging engineer, you can well afford to investigate the benefits to be obtained by securing one. If you have never utilized the services of one of the many packaging testing laboratories, you may be overlooking an opportunity to realize tremendous economy over your present packaging methods.

"If we keep on, day in and day out, doing the same thing the same old way for years and years, no progress will be possible. To progress we must be ready to try new means, new methods, and to take advantage of technological advances. We can always go back to old methods but we can never go ahead unless we exert the effort to go forward. When you return to your office today, I am going to ask you to do me a personal favor. It is a very small request. All I ask is that you devote at least five minutes of your valuable time to

meditating on the problem: "Is there something constructive which I can do in my own organization to reduce freight loss and damage and to improve my company's methods of packaging and handling freight?" I am sure that you will find something which you can do, because this problem is not the other fellow's job — it is your job — it is my job — it is the job of each of us. . . ."

ANNOUNCE SEVEN MORE NST CERTIFICATIONS

The National Safe Transit Committee has announced the following certifications:

Artkraft Mfg. Co., Lima, Ohio; Challenge Stamping & Porcelain Co., Grand Haven, Mich.; Federal Enameling & Stamping Co., Pittsburgh; Fogel Refrigerator Co., Philadelphia; International Harvester Co., Richmond, Ind.; Sylvania Electric (Canada) Ltd., Dunnville, Ontario; and Westinghouse Electric Corp., Pittsburgh.

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TO MEET YOUR SPECIFIC SHIPPING PROBLEMS

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Ranges! Refrigerators! Small appliances! No matter how simple or complex your packaging conveyor line, Acme Steel strapping tools quickly adapt to the need at hand. Consider the packaging department at O'Keefe and Merritt Co. (Idea No. 458 pictured above). *Think of it as your own.*

First the appliance is put in a lock-fold carton. Then the mounted Acme Steel strapping tool is swung into action. It *tensions, seals and cuts* the strap. A flick of a finger and the tool is out of the way. Another strap is applied at the bottom. In less than a minute your container is closed, reinforced and your appliance is ready to ship in a sturdy, dirt-free, customer-appealing package.

Long experience and ingenuity qualify your Acme Idea Man to offer sound recommendations for improving your packaging and shipping methods. Let him demonstrate and recommend. Consult your local phone book or write for literature and further information to Dept. RS-95.

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(Above) Costly, heavy nailed crates eliminated. New, specially designed American Wirebounds save money for Humphries at every level.

(Right) The SAFE TRANSIT LABEL certifies this Humphries shipment as tops in scientific, protective packaging. No more gambling on safety for shipper and receiver.

Awarded 1st and Only
SAFE TRANSIT LABEL
for
Cast Iron
Fixtures!



- ★ Save 67% packing manhours ★ Save 5% materials costs
- ★ Save shipping weight ★ Save damage, handling, claims

Another American "first"! It can save you money! At Humphries, "where important things are being made to happen", porcelain cast iron fixtures now travel in the *first and only* wirebounds **SAFE TRANSIT COMMITTEE** approved for this type of ware. Again, American designs succeed where others fail. Humphries say they cost 5% less than materials alone for the old nailed crates. They pack 300% faster! They ship lighter—save at least \$300 per 5000 units. Receivers are big boosters—report far easier handling, stacking, unpacking. Save untold

manhours, avoid "headaches". No chipped finishes by hammer or crating bar, no "popping" nails. No damages and claims due to crate failure. Let American adapt new wirebound design principles to *your* products. Get the American 4-way analysis of your packaging needs, and *save money!* No cost, no obligation. Write or phone.

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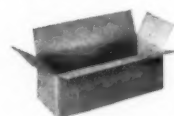
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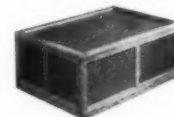
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Wirebound boxes, crates (ship, tote, palletized)



Corrugated cartons, inner-packing, etc.



Cleated panel boxes (fibreboard, plywood)



Nailed-wood boxes crates, pallets, etc.

Packaging, handling show set for New York

**exposition to be held September 20-22 at Kingsbridge Armory, with short course
on packaging and materials handling held at NYU's College of Engineering**

FOR the first time in its 10-year history, the Society of Industrial Packaging and Materials Handling Engineers (SIPMHE) will present its annual Packaging and Handling Exposition in New York City, at Kingsbridge Armory, September 20-22.

Billed as a "triple feature" trade show, the exposition will combine manufacturers' exhibits of the latest improvements in packaging and handling, short course technical sessions, and a nation-wide competition for outstanding achievements in specific packaging and materials handling applications.

Theme—"a decade of progress"

The 1955 show will center around the theme, "A Decade of Progress". In support of this theme, SIPMHE has asked that exhibitors feature materials, equipment and techniques which exemplify the industry's progress since World War II.

Serving this year as general exposition chairman is R. Chester Reed, supervisor of packages and shipping for The Texas Company.

Allyn C. Beardsell, vice president and general manager of the New York laboratory of Container Laboratories, Inc., is chairman of the packaging and handling short course.

Wilmer J. Balster, president of The Don L. Quinn Company, is chairman of the protective packaging and materials handling competition.

Short course program

This year's short course education program will be held on the campus

of the College of Engineering, New York University, September 19-21. The program will be conducted under the sponsorship and in cooperation with NYU's Office of Special Services to Business and Industry. Up to four different sessions will be held concurrently.

One three-day session will consist of a "refresher" course on mathematics, physics and chemistry, with Monday, September 19, devoted to algebra, geometry, trigonometry and logarithms as related to cargo, storage, freight and transportation. On Tuesday will be a review of scientific principles governing displacement, acceleration, stress and strain, expansion, friction, vibration and insulation. Corrosion, acidity, electrolytic action and alkalinity will be discussed on Wednesday.

On Monday and Tuesday, concurrently with the review sessions, will be one course on special problems and techniques of industrial packaging, and another course on applied principles of materials handling. These are also full-day sessions. Subjects to be covered on Monday will include materials, standardization, field proving, and general evaluation. Tuesday's session will deal with cushioning and shock problems, specifications, and quality control.

Another two-day session, on Monday and Tuesday, will cover applied principles of materials handling — such as equipment, warehousing, radio control of equipment, mechanization, automation, and safety.

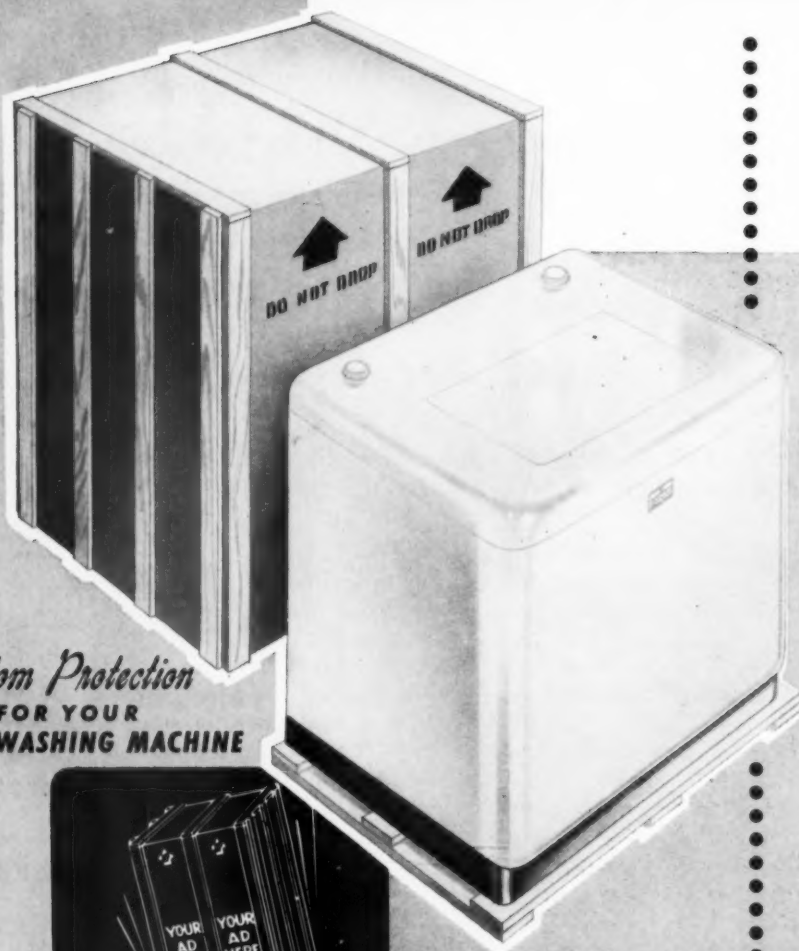
On Tuesday and Wednesday, will be presented two short course ses-

sions of special interest to management and to individuals in non-technical work. These sessions will establish the connecting link between the packaging and materials handling division of an industrial organization and its administrative and merchandising departments. Tuesday's session will be given over to the management aspects of packaging and materials handling, with Wednesday's session covering "The Package as a Selling Tool".

Packaging competition

The competition for national recognition in protective packaging and materials handling is expected to attract hundreds of entries from all classifications of industry. Primary purpose of the competition is to stimulate creative thinking among packaging and handling engineers, according to C. J. Carney, Jr., SIPMHE managing director, who added that more than \$35,000 in prizes have been awarded to past winners.

Since the program was first offered to industry ten years ago, it has produced many functional and design improvements which later became standard within the \$15,000,000,000 industry which protects and handles most of the nation's manufactured goods. For example, it was through this activity that popcorn first became known as a cushioning material in packaging. Other improvements have been heralded in the fields of protection against shock, moisture and temperature extremes, stated Carney.



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16th and Maple Sts., Louisville, Kentucky
Hamb & Martin Mfg. Co. P. O. Box 108, Murfreesboro, Tennessee
Illinois Box & Crate Co. 811 Center Street, Plainfield, Illinois

Kieckhefer Box & Lumber Co. 1711 West Canal Street, Milwaukee, 3 Wis.
Lane Container Corp. 10212 Denton Road, Dallas, Texas
Lewisburg Container Co. 243 Singer Street, Lewisburg, Ohio
Livingston Wood Manufacturing, Ltd. Tillsonburg, Ontario, Canada
Love Mfg., Inc. 608 South Commerce Street, Wichita, Kansas
Pennsylvania Box & Lumber Co. Terwood Road, Willow Grove, Pa.
Utility Crate Corporation 1985 E. 16th Street, Los Angeles 21, Calif.

—an inquiry to any of these companies will get prompt attention

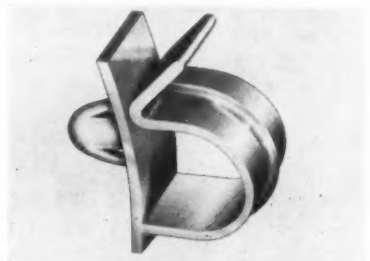


The • WATKINS CONTAINER • Manufacturers

Supplies and Equipment

I-10. One-piece plastic clamp

New A new one-piece plastic clamp for holding wires, cable and tubes has been introduced. It is equipped with a nylon fastener which is non-chafing, non-corrosive



and self-insulating. The clamp is lighter than aluminum, can withstand a wide temperature range and has a tight rattle-free application. A variety of wire and tube sizes plus a range of panel thicknesses can be accommodated with this fastener.

I-11. Plastic tapes

New A new line of plastic tapes offering a large color is on the market. Marketed in ten different colors, grey, blue, yellow, brown, green, white, red, black, pink and turquoise, the tapes are water-proof and washable. All colors have a smooth glossy appearance which are stain and fade resistant. The tape is flame resistant also.

I-12. Aluminum specialty tubing

New New high-strength aluminum specialty tubing has been perfected which is available in a range of shapes and sizes. The tubing possesses high resistance to the general corrosive conditions encountered in many applications. Weldability and good surface finish are some of its other features, as well as a variety of shapes — square, rectangular, in special configurations and round. It is recommended for water heaters, gas engines, refrigerators, appliances, condensers, unit heaters, etc.

More Information

For more information on new supplies, equipment and literature reviewed here, fill out the order form, or write to us on your company stationery.

I-13. Heat-resistant tape

New A new black crepe paper masking tape is now available. Constructed with a transparent adhesive and semi-gloss, flattened crepe backing, it has firm, heat-resistant adhesive which holds at normal or forced drying oven temperatures and releases without adhesive transfer on removal. Its masking range is from 50°F. to 240°F.

The tape is designed to prevent cold flow, eliminating sticky tape edges when applied to a panel. It is recommended as a bundling tape for combining insulated wires in TV, radio and household appliance assembly and as a masking tape where color will differentiate size or use.

I-15. Tack cloth

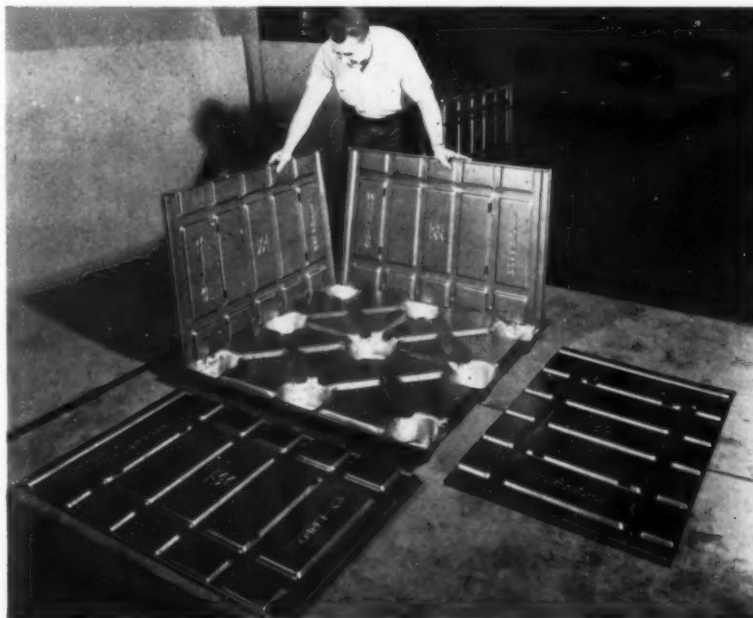
New Exceptional tackiness imparted by a unique formula is a major feature of a new tack cloth. Used in metal wiping applications when high quality finishes are to be applied, the tack cloth is said to re-

to next page →

I-14. Lightweight shipping container

New The all-metal Band-Box is said to eliminate all objectionable features that are inherent in many types of shipping containers. It consists of a compact combination steel pallet, container sides and top, which are light in weight, strong and durable. Tierable, due to its design and stamping, it is a four-way pallet and shipping box combination that

can be utilized efficiently and inexpensively for inter-plant and/or intra-plant purposes. It is easily set-up in minutes. All parts of a given size are interchangeable. It comes in three standard sizes, but additional sizes can be made to meet individual requirements. It has been tested to support static loads in excess of 10,000 pounds.



move all foreign dust and grit particles to pave the way for flawless additional finishes. The tack substance resists drying indefinitely and offers no danger of spontaneous combustion. It is non-reactive on any metal surface. All dirt and dust par-



ticles are absorbed into the cloth after a single pass. Other advantages include time saving under production conditions and unusually clean results with very little effort. Softness and pliability characteristics enable the user to work sharply contoured surfaces.

I-16. Miniaturized clip

New The new Mini-gator clip is described as the one truly miniaturized clip. Dimensions are: length, 1-1/16"; nose, 11/64" and weight, 1/20 ounce. Mini-gators are manufactured in both steel (cadmium plated) and solid copper. Separate, one-piece insulators are available in both red and black, permitting on-sight identification of hot and cold test leads. The insulators fit skin-tight, do not materially increase the clip's size but completely prevent shorts and shocks. The Mini-gator makes quick, temporary test connections in the smallest crevices of compacted miniaturized and sub-miniaturized electrical and electronic equipment. It has a bite strong enough to cut corrosion and protective coatings. A free sample is yours for the asking.

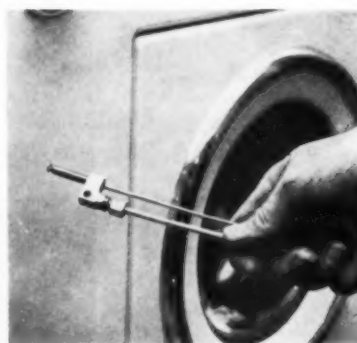
128

I-17. High potential power supply for electrostatic spraying

New A new ionic high potential power supply for electrostatic paint spraying has been developed. It is supplied as a two-piece, remote-controlled unit. The power supply unit is in a heavy-gauge steel tank usually mounted above the spray booth out of reach of the operator. The control unit, designed for wall mounting, is in a separate, heavy-gauge, polished aluminum cabinet and incorporates a special electronic spark-guard for safeguard against arc-overs. The complete unit is capable of producing a peak of 140 Kilovolts.

I-18. Midget-sized pilot for gas appliances

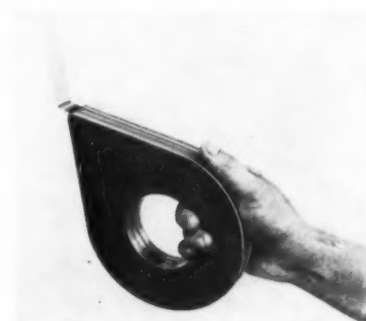
New Mini-Pilot, a tiny, non-aerated pilot burner, has been adapted to gas appliance applications. About 1/5 the size of conventional pilot burners, the device, developed for use on gas ranges, has



been successfully field-tested on water heaters and clothes dryers. Flame retention stability is achieved by a baffle element that holds the flame to the port, even under "wind tunnel" conditions. It is free from difficulties due to linting. It burns with a stable blue flame on all gases and normal pressures. It generates a higher voltage than other types of single thermocouple safety pilots, allowing for greater flexibility in choice of high limit switches and leads on water heater installations. It is easy to install in appliances with a minimum of available space.

I-19. Tape Rite applicator

New Elimination of waste, fast and accurate application and simplicity of operation are three features of the Tape Rite applicator, a new one-hand dispenser for all pressure-sensitive tapes. The Tape Rite can be used wherever masking, sealing or joining tape is required. Tape pays out of the applicator and is firmly attached to the job surface by a resilient steel "finger". When the correct point is reached, the unit



is rolled over, and the serrated edge of the "finger" cuts the tape. Tight construction of the Tape Rite keeps tape clean and moist, the manufacturer states. Made of steel and finished in green metallic enamel, the unit will accommodate tape 3/4" or 1" wide with a standard 3" core.

I-20. Mesh-type, waterproof coated abrasive

New A mesh-type waterproof coated abrasive product resistant to filling and loading is now available. Called Wetordry "Fabricut", the material is composed of a cloth mesh coated on both sides with mineral grains bonded with a heat-resistant, waterproof resin. It is available coated with aluminum oxide or silicon carbide mineral and can be used for either wet or dry sanding, by hand or machine. It has a self-cleaning action which minimizes filling as the stock being removed passes through the openings in the mesh. If it does become clogged, it can be blown clean with compressed air. The material is available in coarse to fine grits, ranging from 100 to 400.

SEPTEMBER • 1955 finish

New Industrial Literature

901. "Science and Skill in Sheet Metals"

New This booklet illustrates large and medium size seamless stamping jobs produced by the manufacturer. It also gives complete data on the company's facilities for finishing, assembling, galvanizing, spray finishing, vitreous enameling and welding.

902. 20-page booklet on uses of infrared

New Where can infrared be used? What are the advantages of heating by radiation? How much does it cost? These and hundreds of other answers are provided in a new booklet, "Applications Unlimited". The infrared process is thoroughly discussed and graphically illustrated. Specific examples of infrared uses are covered comprehensively. A special section devoted to case histories cites actual savings made by companies whose manufacturing processes include: baking, drying, preheating or degreasing. Another section illustrates with general specifications, types of industrial ovens available.

903. Cleaning and finishing brochure

New A quarterly brochure dealing with precision cleaning and finishing is now available. The first issue contains a complete discussion on the wet blasting process and case histories about reconditioning of plant equipment, increasing cutting tool life, etc. Other subjects will be covered in future issues. Persons will be placed on the mailing list to receive this publication by request.

904. Interchangeable grinding wheels

New Bulletin No. 9 describes interchangeable inflated grinding wheels. Available with plain or serrated contact faces, these grinding wheels are said to be extremely light in weight; one model weighs only 15 ounces. They are available in three sizes.

905. Pre-cut protective masks

New A new six-page illustrated bulletin gives many practical suggestions on how to save time and cut costs in spray painting and other metal finishing where masking is necessary. Bulletin 160-C describes in detail actual case histories with photographs of production and other applications using pre-cut protective masks. Applications shown include paint spraying, flow coating, dipping, brushing, anodizing and plating, machining, sandblasting and tumbling. There is a wide variety of tapes that adhere to any surface. Unlimited variety of shapes, quick removal from casting, no adhesive residue and elimination of paint build-up along the mask edges add up to faster production, few rejects and a clean, attractive edge to the finish.

906. Finishes for aluminum

New A new four-page booklet includes a discussion on finishes for aluminum — various paints and specialized finishes, such as vitreous enamels.

907. "Coloring Anodized Aluminum"

New The latest developments on coloring anodized aluminum have been compiled and are now available in booklet form. Referred to are the following subjects: types of aluminum finishes possible

and the versatility of anodizing methods; peculiarities of dyestuffs, their special properties and behavior patterns; choice of alloy in relation to the appearance of the finished product; surface preparation and the range of effects obtainable; anodizing conditions and their control for consistent results; sulfuric acid electrolyte and dyeing procedure and control methods with color chips of most-used colors.

908. Volatile corrosion inhibitor paper

New An illustrated four-page folder tells how industry is using volatile corrosion inhibitor paper to cut packaging costs, reduce maintenance overhead and improve plant cleanliness and safety by eliminating grease and oil slushing.

909. New method for making aluminum tube from strip

New A technical bulletin recently issued details on a new low-cost method for making aluminum tube directly from strip. Using this method, a fabricator can make his own tube in his own plant. The new method is claimed to greatly extend the field of application of aluminum tube, as it handles diameters from $\frac{1}{2}$ to $2\frac{1}{4}$ " and wall thicknesses from 0.020 to 0.083".

The method combines a series of forming rolls with induction heating for welding at a rate of 100 feet per minute. The method is claimed to be suitable for working non-heat treatable alloys.

FINISH
York Street at Park Avenue
Elmhurst, Illinois

Please forward to me at once information on the new supplies and equipment and new industrial literature as enumerated below:

No. _____ No. _____ No. _____ No. _____

No. _____ No. _____ No. _____ No. _____

Name _____ Title _____

Company _____

Company Address _____

City _____ Zone _____ State _____

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AMERICAN PORCELAIN ENAMEL COMPANY	HL-10	McDANIEL REFRACTORY PORCELAIN COMPANY	18
APPLIANCE MFG. CO., INC.	HL-2	MEYERCORD COMPANY, THE	94
ARMCO STEEL CORPORATION	1	MILLS PRODCTS, INC.	2
ASHDEE ELECTROSTATIC PRODUCTS, INC.	92	MONARCH ALUMINUM MFG. CO.	7
BIGELOW-GARVEY LUMBER CO.	ST-12	MULLINS MFG. CORP.	HL-32
BINKS MANUFACTURING CO.	19	NAGEL-CHASE MFG. CO.	HL-17
BURDETT MANUFACTURING CO.	16	NATIONAL LOCK COMPANY	106
CENTURY VITREOUS ENAMEL CO.	14	NEW MONARCH MACHINE & STAMPING COMPANY	HL-7
CERAMIC COLOR & CHEMICAL MANUFACTURING COMPANY	33	NEW PROCESS D-ENAMELING CORPORATION	34
CHICAGO MILL & LUMBER CO.	ST-4	NEWCOMB-DETROIT	110
CHICAGO VITREOUS CORP.	HL-39	NORTHWEST CHEMICAL CO.	42
CIRCLE F MANUFACTURING CO.	107	PEMCO CORPORATION	HL-29
COORS PORCELAIN COMPANY	45	PENNSYLVANIA SALT MFG. CO.	46
CUYAHOGA SPRING COMPANY	94	PITTSBURGH PLATE GLASS CO.	30
DANIELSON MFG. CO., V. W.	HL-25	PORCELAIN ENAMEL INSTITUTE	103
DETROIT CONTROLS CORP.	HL-5	PYRAMID MOULDINGS, INC.	9
DRAKE MANUFACTURING CO.	100	RANSBURG ELECTRO-COATING CORPORATION	HL-6
DU PONT DE NEMOURS & COMPANY, INC., E. I.	98, 102	RATHBORNE, HAIR & RIDGWAY BOX COMPANY	ST-10
ENAMEL PRODUCTS COMPANY	110	ROSS ENGINEERING CORP., J. O.	105
FAHRALLOY COMPANY, THE	10	SHELL CHEMICAL CORP.	27
FERRO CORP.	HL-4, 4th COVER	SORENG PRODUCTS CORP.	HL-22
FIRESTONE INDUSTRIAL PRODUCTS COMPANY	HL-12	SOUTHERN SCREW COMPANY	4
FOLLANSBEE STEEL CORPORATION	3rd COVER	SPEE-FLO COMPANY, THE	97
FOOTE MINERAL COMPANY	15	SPERRY RUBBER AND PLASTICS COMPANY	HL-28
GAYNES ENGINEERING CO.	ST-12	SPRA-CON COMPANY, THE	HL-24
GEUDER, PAESCHKE & FREY COMPANY	HL-34	STEVENS, INC., FREDERIC B.	104
GLIDDEN COMPANY, THE	HL-19	STRUTHERS WELLS CORP.	17
GRAND RAPIDS VARNISH CORP.	28	TITANIUM PIGMENT CORP.	11
HOMMEL COMPANY, THE O.	91	TUTTLE & COMPANY, H. W.	HL-35
INGERSOLL PRODUCTS DIV. BORG-WARNER CORP.	HL-16	UNION STEEL PRODUCTS CO.	5
INGRAM-RICHARDSON, INC.	2nd COVER	VITRO MANUFACTURING CO.	8
INTERNATIONAL PAPER CO.	ST-2	WATKINS CONTAINER MFRS.	ST-16
KERNS COMPANY, L. R.	26	WEAN EQUIPMENT CORP.	87
KING-SEELEY CORPORATION	12	WHEELING STEEL CORP.	29
		WIREBOUND BOX MFRS. ASSN.	ST-9
		YOUNGSTOWN SHEET AND TUBE COMPANY	35

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